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LAUNCH OF THE KROONLAND.

On Thursday of this week the Kroonland, which is the third of the quartette of new twin-screw steamships which the International Navigation Co. has built for the New York-Antwerp service of the Red Star line, was launched at the yards of the Wm. Cramp & Sons' Ship & Engine Building Co. in Philadelphia. She is the largest ship ever built in the United States and is a sister vessel of the Vaderland, which was launched on July 12, 1900, at the yards of Messrs. John Brown & Co., Ltd., of Clydebank, Glasgow, and the Zeeland which was launched at the same yards Nov. 4, 1900. The ship was christened by Mrs. R. G. Griscom. The commander and officers have not been selected as yet. In a general way the Kroonland is built on the same plan as the Vaderland, but in the matter of appointments and various conveniences it is even an improvement over the latter. The Kroonland is 580 ft. long, which is 26 ft. longer than the St. Louis and St. Paul, and has a register of 12,000 tons, or 400 tons more than the St. Louis and St. Paul. She possesses every device for the safety and comfort of passengers and carries the latest improved appliances for the protection of life. Except in the one point of speed the Kroonland is the equal of the finest steamships afloat and will enable persons of moderate means to enjoy all the luxuries of the fastest ocean greyhounds. Passengers are carried on three decks, the promenade, the upper and the saloon deck, and among the numerous distinct advantages offered is the location in the midship of all first and second cabin saloon and staterooms, a point where motion is at a minimum. For lighting and ventilation, in addition to the numerous sidelights, there is an unusually large trunk well extending through two tiers of decks, tastefully decorated in which and lighted through a richly ornamented glass roof. The seats are covered with a rose colored moquette and the upholstery throughout is in excellent keeping with the color scheme of the other decorated material. All the rooms are unusually large, excellently lighted and ventilated by the same process which has won so many words of praise from patrons of the St. Louis and St. Paul. In cold weather this air is heated by passing over steam pipes and the heat thus supplied may be regulated for each deck independently. By this superior system the inner rooms are made as comfortable as the outer ones. The interior rooms, which in many vessels are sometimes so dark as to require artificial light, are in these lighted from overhead by oval glasses, sufficiently large to give ample light. For extra illumination electric lights are provided. All of these rooms are finished in mahogany.

Everything possible has been done to make the music room and library attractive. The smoking room for first-class passengers is paneled in fumed American oak and has all of the latest appointments and conveniences. The description of the first cabin staterooms will very nearly serve for the second cabin, the fittings being almost identical. The steerage quarters are commodious and well ventilated.

There are berths for 343 first-class passengers, 194 second-class and about 1,000 third-class. The arrangements for loading and discharging cargo are very complete.

STORY ABOUT JACOB GREATSINGER.

This story is not maritime but it deals with a character well known and well liked in the lake region. It is taken from the New York Sun:

President Greatsinger of the Brooklyn Rapid Transit Co. did not appear on Tuesday night at the South Brooklyn board of trade's dinner at the Montauk club where he was announced to speak in answer to the statements made by Bridge Commissioner Lindenthal on "The Bridge Traffic Problem." Mr. Greatsinger was on his way to the dinner when he found his elevated railroad train blocked at Myrtle and Grand avenues. He got off the train with other passengers to inquire the cause of the trouble and learned that a piston rod on the locomotive of a train ahead had broken. The passengers on the Grand avenue station were clamoring for the return of their fares. Mr. Greatsinger asked the station agent why transfers had not been issued. When told that there were no transfer tickets at the station Mr. Greatsinger telegraphed to the company's headquarters and upon receiving a bunch of tickets handed them out to the passengers. Then he went down stairs with the other passengers to the street and boarded a trolley car. He rode to Bridge street where the crippled engine was lying and found a gang of the company's employes tugging at the engine, trying to get it on a side track. Mr. Greatsinger told them how by means of ropes the broken rod could be kept from interfering with the moving of the locomotive. While the men were trying this a rope broke and one of the men fell on his face. The others, not recognizing Mr. Greatsinger, refused to try the scheme again, declaring that they were not going to take chances of getting hurt. Then Mr. Greatsinger, who was attired in evening clothes, climbed on the engine and held the guide rope. The locomotive was sidetracked. So was Mr. Greatsinger's dress suit. After he got the trains moving he hurried to his home, put on another suit and started for the Montauk club. When he got there he found the dinner over and the diners gone.

It must be a matter of gratification to everyone that the president has decided the case of Schley exactly as he did. He definitely declares Admiral Sampson to have been the commander-in-chief. The battle of Santiago is declared to have been a captain's fight throughout. Schley's retrograde movement prior to the battle and his "loop" during the battle are both condemned.

The annual meeting of the stockholders of the Great Lakes Towing Co. was held in New Jersey on Wednesday. The old board of directors, as it stood at the close of the year, was re-elected. The directors will meet in Cleveland next Wednesday and elect officers. The dividend, declared a month ago, became payable Thursday of this week.

CAPT. HOBSON TO BE RETIRED.

Some time ago Capt. Richard P. Hobson, who sank the Merrimac in the mouth of Santiago harbor, applied to the retiring board of the navy for permission to retire from active service on the ground that his eyes were giving him much trouble. The naval board did not hold the cause to be sufficient and declined to retire the captain. President Roosevelt has now taken up Hobson's cause and has sent a message to the senate recommending his retirement. Senator Gallinger has accordingly introduced a bill providing for Mr. Hobson's transfer to the retired list. In his message the president gives as his reason the trouble that Mr. Hobson has had since 1900 with his eyes and recites the history of that trouble. It appears that in June, 1900, he was admitted to the naval hospital at Yokohama, Japan, when, according to the records, he suffered from weakness of the eyes and retinitis, which infirmities, it was stated, had been contracted while on duty in repairing ships at Hongkong. In January, 1902, he was examined by a retiring board, which decided that his incapacity was not such as to justify retirement.

The president's message concludes as follows:

"Without suggesting that any injustice has been done by this finding, and while in effect pronouncing it correct, Mr. Hobson states in a letter addressed to the secretary of the navy Feb. 5, 1902, that 'the duty required in the construction corps in connection with plans and blue prints and in connection with inspection and supervision in the glare at ship yards and navy yards, requires just the kind of use of the eyes that is painful and injurious and would tend to thwart their recovery;' that the condition of his eyes has improved since his return to the United States while on special duty not in the usual line of work of the construction corps, but that 'under these favorable conditions the irritation and sensitiveness continue and show that he should not undertake work that taxes the eyes in the future.' He accordingly asks special legislation authorizing his retirement as for disabilities incurred in the line of duty. This request is approved by the chief constructor and by the secretary of the navy.

"In consideration of the foregoing, but especially of the gallant service rendered by Mr. Hobson in the sinking of the Merrimac in the harbor of Santiago during the recent war with Spain, I recommend the enactment of a suitable measure for his relief."

The bill introduced by Senator Gallinger authorizes the president "to transfer to the retired list of the navy, as for disabilities incurred in the line of duty, Naval Constructor Richmond P. Hobson, United States Navy, at the rate of pay provided by section 1588 of the revised statutes in the case of officers retired on account of incapacity resulting from long and faithful service."

STEEL CORPORATION MEETING.

The first annual meeting of the stockholders of the United States Steel Corporation was held in New Jersey on Tuesday. While only about thirty stockholders or directors were present 76 per cent. of the stock was represented. The meeting was public and open to anyone who chose to attend. The following were elected directors of the third class for three years: J. Pierpont Morgan, John D. Rockefeller, Henry H. Rogers, Charles M. Schwab, Elbert H. Gary, George W. Perkins, Edmund C. Converse and Percival Roberts, Jr. The following were elected directors of the second class for two years: Francis H. Peabody, Charles Steele, William H. Moore, Norman B. Ream, Peter A. B. Widener, James H. Reed, Henry C. Frick and William Edenborn. The following were elected directors of the first class for the three years ending in 1905: Marshall Field, Daniel G. Reid, John D. Rockefeller, Jr., Alfred Clifford, William E. Dodge, Nathaniel Thayer, Abraham S. Hewitt and Clement A. Griscom. The Steel Corporation has now 42,000 stockholders, of whom 24,000 are preferred and 18,000 common stockholders.

The syndicate managers of the United States Steel Corporation has declared a dividend of 5 per cent., or $10,000,000 on the amount of $200,000,000 for which the underwriting syndicate was formed. Of the $200,000,000 for which the syndicate made itself liable only 12½ per cent., or $25,000,000, was ever called in. This $25,000,000 was paid back some time ago to the syndicate members. This dividend is the first on account of syndicate profits.

THE ORE FREIGHT MARKET.

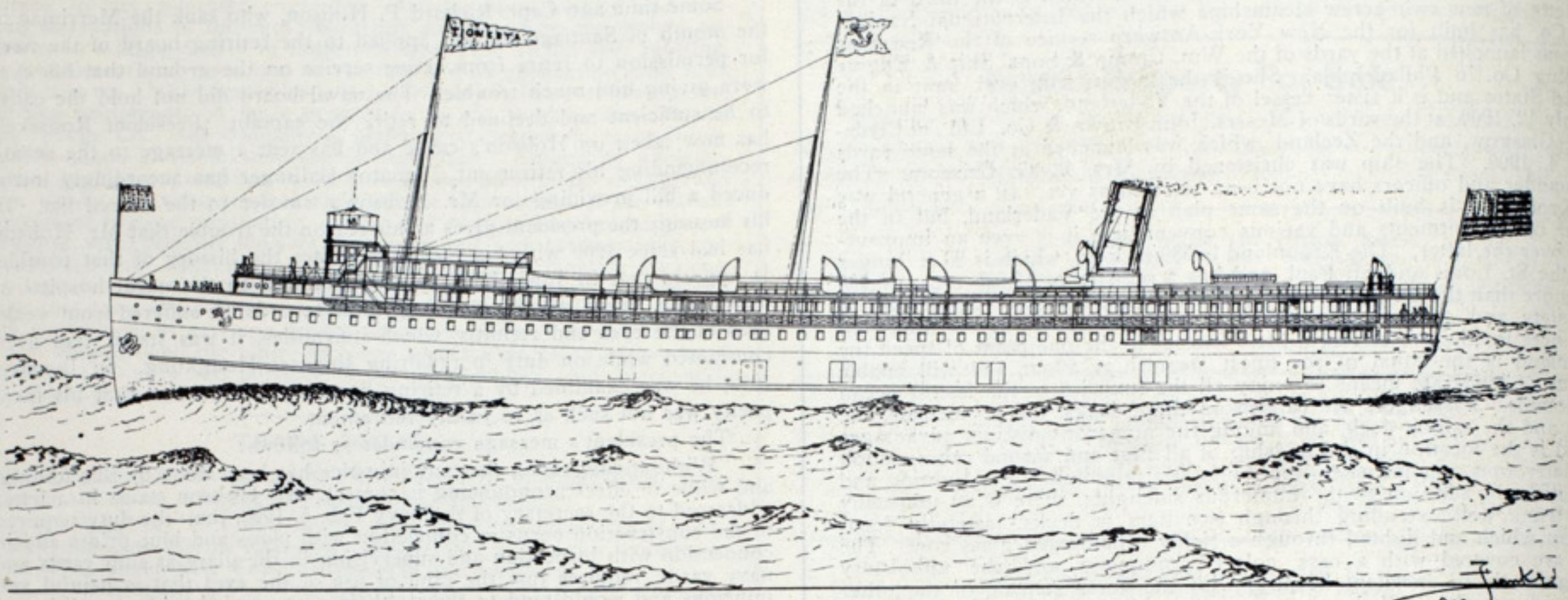
The ore freight market is in precisely the same condition that it was one week ago. A little chartering has been done upon an 80 cent basis from the head of the lakes but the United States Steel Corporation and other large shippers have not seen fit to modify their original offer of 75 cents. The ground upon which they ask a reduction from last season's carrying charges is that of supply and demand, making the claim of an excess of tonnage. The vesselmen, on the other hand, express the utmost confidence in the final establishment of the 80 cent rate and, firm in that faith, have gone on their vacations. All the shippers that have chartered have practically covered their season's supply. The Cleveland-Cliffs Iron Co. has closed its entire movement upon the 80 cent basis, a great part of their ore, of course, moving at the differential from Marquette. The large shippers are patiently waiting for the single defection from the 80 cent ranks, whereat, they say, all the rest will follow; but the vesselmen claim that there will be no defection. While the railway congestion and car shortage is quite acute today, inquiry among the railroads develops the fact that they are doing all in their power to remedy this condition and hope to show a material improvement by the time navigation opens.

NEW ANCHOR LINE STEAMER.

As already announced in the Review, the Erie & Western Transportation Co. (Anchor line) is making important additions to its fleet of steamers on the great lakes. Contracts for two vessels have been placed. One is a passenger boat for the Duluth-Buffalo service. This steamer is planned on new lines for lake service; the main features being the arrangement of the passenger accommodation entirely above the freight deck, and forward of the machinery. Music room, library, dining saloon, galley and mess rooms on the promenade deck and clear of all sleeping rooms. The dining room amidship in the easiest place on the ship. The entrance for first-class passengers is located amidship on main deck, where space is divided off 20 ft. in length and extending across the ship, accommodating the baggage, and broad stairs leading up to the berth deck, on which are arranged four lines of staterooms occupying with the hall the full breadth of the ship and extending from the forward bulkhead to the stack. The rooms are exceptionally large and carefully arranged for ventilation. Each is provided with two berths, a cushioned sofa, porcelain lavatory supplied with water under pressure, electric lamps and service calls.

The lobby amidship will be finished in quartered white oak and provides general access to all staterooms, lavatories, bath rooms, barber shop, etc., also the pursers' and stewards' offices. In the lobby, over the stairs from the main entrance, is a broad flight of stairs leading up into the social hall on the promenade deck. Aft of this hall is the dining saloon, arranged to accommodate 136 passengers, fitted with permanent revolving seats, lighted and ventilated by large plate glass windows on both sides and a dome skylight extending the whole length. This dome also extends over the social hall and the galley. Aft of the dining saloon is the galley, pantry, baker shop, store rooms, cooling rooms kept at any degree of refrigeration by machinery located in engine room. Mess rooms for officers and crew. At the extreme after end of the ship is located the smoking room, completely isolated from the other accommodations by an open passage across the ship. The open space at the stern, aft of this room, provides additional accommodation in fine weather.

Immediately forward of the social hall are located eight large parlor rooms, each provided with a double folding bed, cushioned sofa, clothes press, separate bath and toilet room. Forward of these rooms de-luxe is the music room and library, a bright room 70 ft. in length, with broad promenade on each side, plate glass windows, mahogany paneling and luxuriously furnished. On the upper deck are located the pilot house, officers' quarters and managers' rooms. This deck also furnishes additional promenade for passengers. Second class passengers are provided for on main deck, aft, and have a special entrance separate from the other passengers.



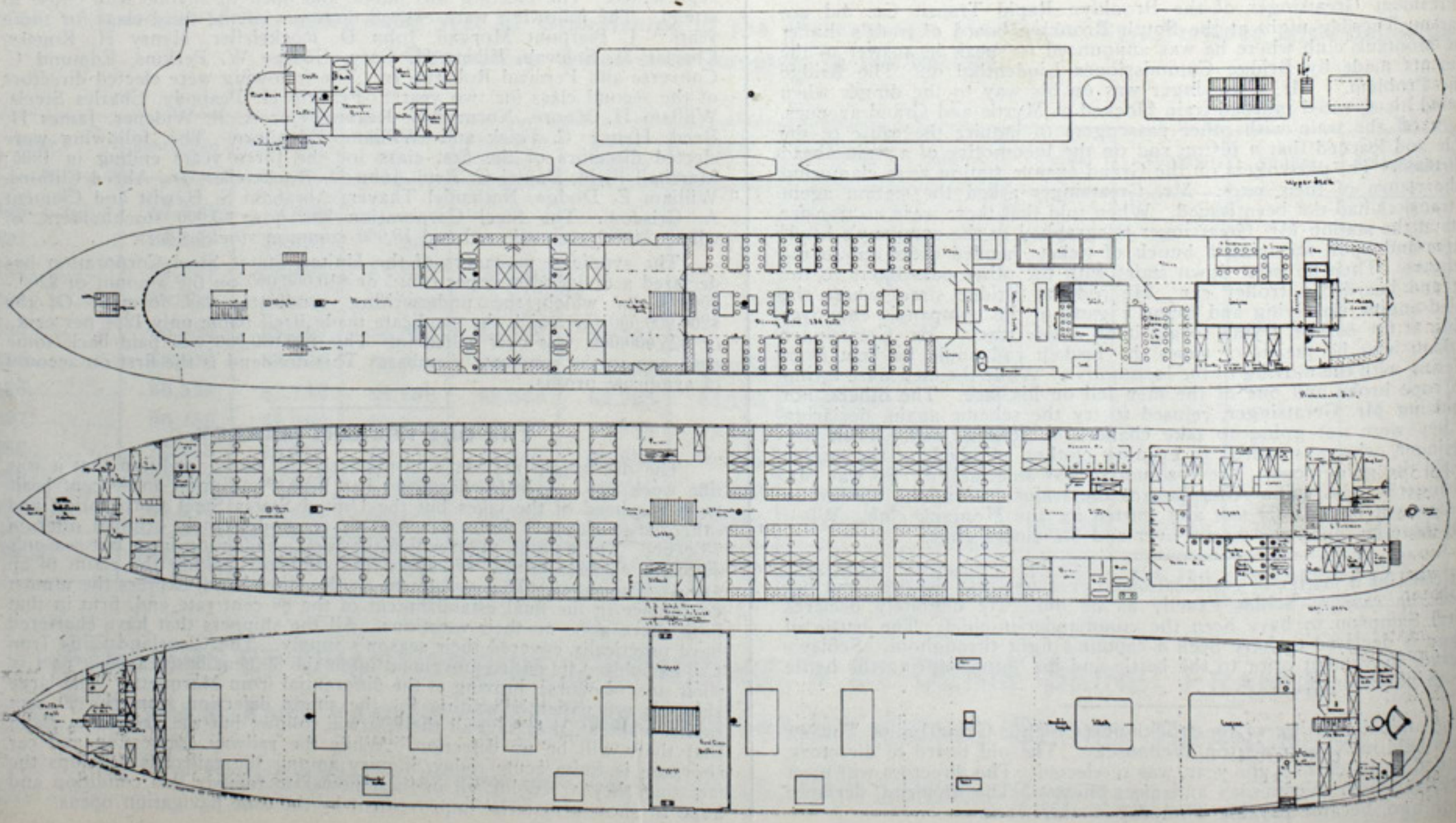
THE ERIE & WESTERN TRANSPORTATION CO'S PASSENGER STEAMERS
ANCHOR LINE

The dimensions of the ship are as follows: Length, on keel, 340 ft.; length, over all, 360 ft.; beam, 45 ft.; depth, 28 ft.

The hull is built of steel up to promenade deck and is divided into nine water-tight compartments by eight bulkheads. There is a double bottom with capacity for 900 tons of water ballast. Four cargo holds under main deck; seven hatches, eight gangways on each side; two cargo holds on main deck. The total cargo capacity is 3,500 tons, and the coal bunker capacity 350 tons.

The engines are quadruple-expansion, of 2,500 H.P. There are four cylindrical boilers, worked with the Howden hot draft system, steam windlass, steam capstans, steam steerer and complete outfit of the highest class for passenger steamers. The ship is building by the Detroit Ship Building Co., and will be ready for commission at the opening of navigation, 1903. She will be christened Tionesta.

Besides the construction of this passenger and freight steamship the company is also building a vessel to carry freight exclusively. This vessel is as large as can be built to ply upon the Chicago river. It is to be used solely for Lake Michigan business. It will be 375 ft. long over all, 350 ft. keel, 46 ft. beam and 30 ft. deep.



CARNEGIE FAVORS PANAMA ROUTE.

Andrew Carnegie in a letter to Senator Platt of New York declares in favor of the Panama canal as against the Nicaragua. His letter is as follows:

"The senior senator from New York should have a commanding voice in regard to the Isthmian canal. I subscribed $10,000 to test the Nicaragua scheme, but Gen. Ludlow's report satisfied me that it was not to be thought of as a reasonable undertaking. I think that I have read every official report published since then, and all have confirmed my opinion that, instead of $200,000,000, it will cost $400,000,000, and will not be a serviceable canal when finished. It has curves of 4,000 ft. radius; the Manchester canal has nothing under 5,000 ft., and yet tugs are required fore and aft of every vessel that tries to pass around these curves. I understand that Senator Morgan and our southern friends believe that the Nicaragua route is shorter than the Panama, but in this I think them mistaken. The commission gives thirty-three hours for the passage; this means daylight only—really three days. It will be found impracticable to pass through at night. May I suggest to you that it would be well to call before the committee the members of the commission and cross-examine them about their preferences, Panama or Nicaragua? There is another point which you, as representing a great commercial city, I think, should consider. There has never been a commission of experts appointed to report upon the traffic tributary to an Isthmian canal. The situation has changed so much during the last ten years that the best informed believe that instead of 6,000,000 tons of traffic there will not be more than a quarter of that. Railroads will reduce their rates to a very low point when it becomes a question of taking additional traffic. But, although the canal will not obtain as much traffic as expected, it will, of course, have a good effect by reducing rates; but the Panama, costing $1,300,000 per year less to work, becomes important. The commission estimates the increased cost of operating the Nicaraguan canal at only $1,300,000 more per year than Panama. This is merely for operating, but what of maintenance? This is a far more important point and the longer distance of the Nicaragua route will, of course, entail more replacement and repairs and liability to disaster.

"As you know, I have had considerable experience in navigating canals, in handling our ore shipments, and I wish to go on record as assuring Senator Morgan and his friends of the south, as well as the north, that they will be more benefited by the Panama canal than by the Nicaragua.

"I am sure, senator, that this is a matter which deserves a great deal more consideration than has yet been given to it. Now, since the Panama seems within reach, I beg you to exert your influence to have the question thrashed out before the committee. ANDREW CARNEGIE."

HAMPTON ROADS SHIP BUILDING & DRY DOCK CO.

The name of the new ship yard enterprise which is backed by ex-Governor Atkinson and State Treasurer Peter Silman of West Virginia, R. C. McCoy of Pittsburg and W. H. Anderson of Wheeling, and which will be capitalized at $2,000,000, has been changed to the Hampton Roads Ship Building & Dry Dock Co., and in the next few days a deal will be closed for the site at Sewall's Point, across Hampton roads from Newport News. In addition to the above mentioned parties several Philadelphia capitalists are interested. A general superintendent for the works has been employed and he is now in Norfolk doing some work in advance of active operations.

The land under consideration is at present the property of the Norfolk & Atlantic Terminal Co. at Norfolk-on-the-Roads, but is held under option by the ship building concern. Seven hundred and three acres, fronting 5,000 ft. on the Elizabeth river, running south from the pier of the Norfolk & Atlantic Terminal Co. at Sewall's Point, and extending back to Boush's Creek, compass the tract. Present plans call for the use of 100 of these acres in the ship yard, the balance has been surveyed and laid off into building lots. The ship yard proper will be some 2,000 or 2,500 ft. south of the pier, and is perfectly square. At the northern corner there will be a marine railway with a capacity of 500 tons, and at the south corner another railway which will carry 1,000 tons. There will also be two large power houses. Electric cranes will travel the entire yard.

In the center of the water frontage there will be a floating dry dock, it is said, with a capacity of 15,000 tons, large enough to hold any battleship in Uncle Sam's navy. This dock will be built on the sectional plan and can be increased in size from time to time. A repair wharf will extend into the river just north of the dry dock. There will be in all sixteen buildings, many of which will be very large. The majority of them will be of brick, while some will be of sheet iron. Three, four and possibly five-story buildings will be erected. The different structures are classified as follows: Power house and machine shop, shipwright shop, inside shipfitter and machine shop, shipsmith shop, plumbers and pipefitters' shop, pattern shop, foundry, shipwright and spar makers' shop, sail and rigging loft, pitch house, store house, general office and boat house. A spur track of the Norfolk & Atlantic Terminal Co. will make a loop through the yard.

Roach's Ship Yard at Chester, Pa., is turning out a new freight propeller for river service which will have a novel stern for this style of craft. It is nothing less than the application of the flaring torpedo boat stern, which holds the after body up when running at full speed or in steaming over shoal places. Such sterns have been incorporated in the design of passenger propellers, but this is the first instance on record where a freight steamer has been built where this peculiar modern idea has been used. The boat will undoubtedly be the forerunner of a large number of the same type. The new vessel is the Chester, which will ply between Chester and Philadelphia, on the Delaware river. She is of the following dimensions: Length, over all, 151 ft. 9 in.; beam, on deck, 24 ft.: beam, molded, 27 ft.; beam, over guards, 26 ft. 8 in.; depth of hold, 10½ ft. The hull is of steel divided into water-tight compartments. The main deck is given over entirely to freight, the officers' accommodations being located on the hurricane deck. The engine of the Chester is of the compound type with cylinders 18 and 36 in. by 26 in. Steam will be supplied by a steel boiler 10½x11 ft. The Chester is owned by the Chester Shipping Co., Chester, Pa.

SHIP BUILDING AT PHILADELPHIA AND VICINITY.

Philadelphia, Feb. 19, 1902.—All is ready for the launch from Cramp's ship yard of the International Navigation Co.'s big liner Kroonland, the greatest vessel ever built in the United States. Provided no unforseen obstacle intervenes the shoe piece will be sawed through at high tide tomorrow. The staging has been knocked away from the Kroonland and the big black and red hull, 650 ft. long, towers high above everything else in the ship yard. The builders have been besieged by hundreds of persons, many from distant points, who are desirous of witnessing the launch, and in deference to the unusual interest manifested in the maiden dip of a merchant ship will throw the gates of the yard open to the public. The Kroonland would have been put overboard on Tuesday had it not been for the ice in the river. It has been several years since so much inconvenience has arisen from this source. For nearly a week the "horseshoe," an abrupt turn in the river above the navy yard, was so congested with drift ice that navigation was practically closed. As many as seventeen steamships were frozen in at one time, remaining for periods varying from one to three days.

At Neafie & Levy's ship yard several launches are held back on account of the ice. The torpedo boat destroyer Barry stands on the ways, practically complete and ready for her trial trip, with little chance of taking the water for many days. President Matthias Seddinger said that it would be folly to send the frail craft down the ways into the midst of the great cakes which are grinding against each other in the stream. The cruiser Denver is also ready to be launched. The Neafie & Levy Co. is anxious to have this effected as soon as possible, as that launching slip is urgently needed for the cruiser St. Louis. This latter vessel has progressed in the shops to the point where it is absolutely requisite that her keel go down to keep within the time limit clause of the contract.

On this line it may be said that despite the optimistic views of ship builders in this locality, expressed only a few weeks ago, regarding the supply of steel and iron, there is unfortunately a scarcity in both markets. This was manifested at Neafie & Levy's last week in the iron delivery of finished shapes to be used in the construction of the Denver and St. Louis together with quite an array of minor craft. Ship builders are anxiously awaiting developments in the situation, fearing that work will be seriously retarded not only on warships but merchant vessels as well.

It is extremely difficult hereabouts to get at the bottom of the failure of the torpedo boat destroyer Bainbridge. That the destroyer did fail on her official trial is now a matter of local history, but the builders are reluctant to comment on the various features. President Seddinger openly expressed himself about a year ago as against the entire general design of these craft. The publication of the objections in a local paper created quite a sensation, Mr. Seddinger being quoted to the effect that everything in connection with the trio—Bainbridge, Barry and Chauncey—had been sacrificed to speed, and that the hulls were too light for the powerful machinery. This interview was later retracted by the paper in which it appeared, but the fact remains, according to a semi-official statement by Constructor J. H. Hanscom, that excessive vibration was primarily responsible for the Bainbridge's inability to meet her contract requirements. The vessel is known to be a well built craft throughout, an embodiment of a rigid adherence to government plans and specifications viewed by the builders with distrust from the incipiency of the undertaking. The future of this vessel and her sister ships is somewhat obscure, but it seems logical that they will be accepted by the government, as the builders cannot in any plausible manner be connected with the failure of the Bainbridge to make. Neafie & Levy's business in merchant ships and cruisers has increased so tremendously of late that there is every probability they will follow the example of the Cramps and have little to do hereafter with torpedo boat destroyers. It is a matter of history that one of the latter, the Mackenzie, was responsible for the failure of the Hillman Ship Building Co., whose defunct plant has since been absorbed by the Cramps, and there is a concensus of opinion in this vicinity that the least ship builders have to do with these troublesome craft the better it will be for their business.

In all probability the Clyde of America will shortly be enriched by another ship yard. The property of the Tway Machine & Blacksmith Co. at Cooper's Point, Camden, N. J., has been disposed of by its owners, Sheriff David Baird, J. Herbert Mathis and John H. Tway, to a syndicate of Philadelphia capitalists, who will operate as the Joseph Cooper Ship Building Co. From what can be learned of the new concern its scope will be quite extensive, comprising the construction of steel and iron vessels, in addition to contracting for extensive repairs. So far the future plans of the company are in an embryonic condition, but it is intimated that business is intended, and that work in improving the property will be inaugurated without delay.

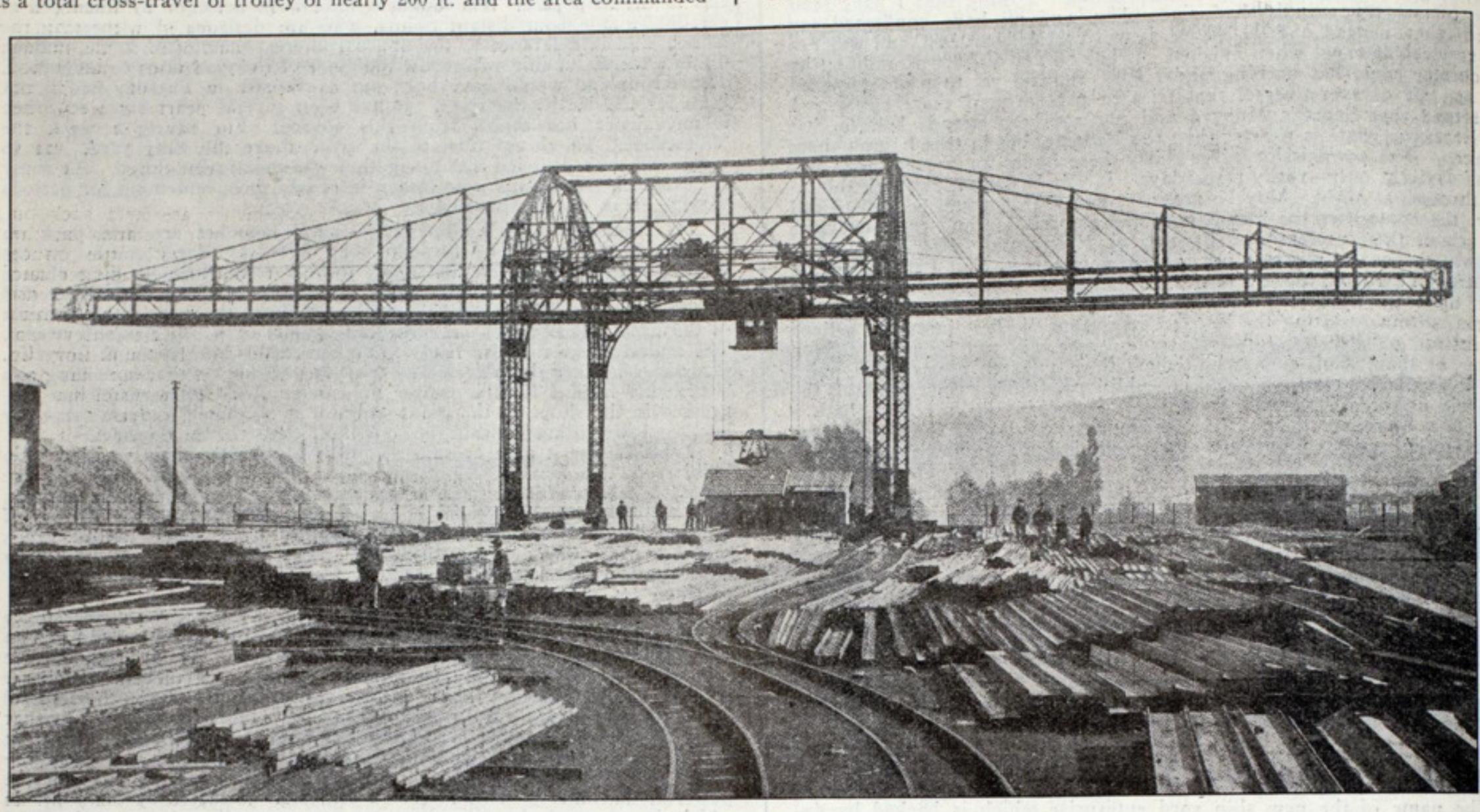
Samuel B. Macdonnell, a director in the Philadelphia maritime exchange, has commenced a vigorous crusade against the sea-going barge and has enlisted the sympathy and support of a local paper in his behalf. Briefly, Mr. Macdonnell contends that the sea-going coal barges, made from old, cut-down ships, are "floating coffins." That they are not inspected and are allowed to go to sea without examined and licensed captains and first mates. The effort to compel inspection of sea-going barges is being well organized. The Seamen's Union, the American Federation of Labor, the Atlantic Carriers' Association, composed of the owners of merchant vessels along the Atlantic coast, and several maritime exchanges, are back of the effort to force the needed legislation. The outcome of the fight will be awaited with the keenest interest. Barges monopolize at least 75 per cent of the coastwise carrying trade of this port, and during the past few years have relegated half of the erstwhile schooners into obscurity.

The device for burning petroleum for fuel is being installed in the steamship Nevadan, recently launched by the New York Ship Building Co. It is viewed with favor by the builders of the vessel and if successful on the trial trip will likely be used in connection with coal quite extensively by vessels trading to this now prominent oil center.

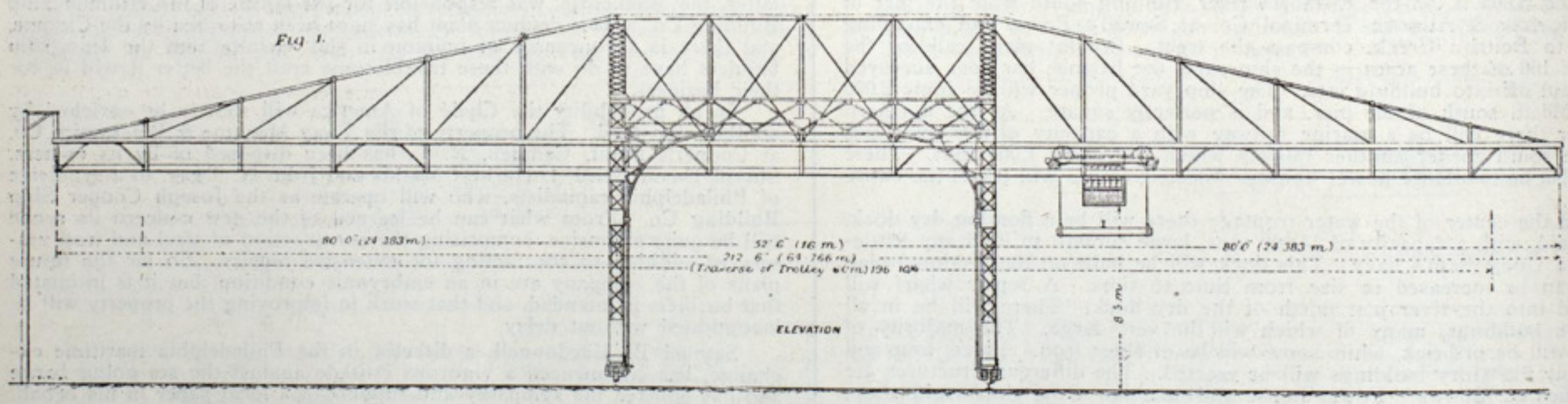
The Mikasa, Japanese battleship, by Vickers, Sons & Maxim, is doing excellently on trials. On a displacement of 15,200 tons, with draught 27 ft. 2 in., she made on the mile 16,400 I.H.P., and a speed of nearly 19 knots. The contract is, indicated horse power 15,000, and 18 knots. The coal consumption at four-fifths power was 1.53 lb., which is about the Vengeance's record. The contract consumption was 1.90 lb.

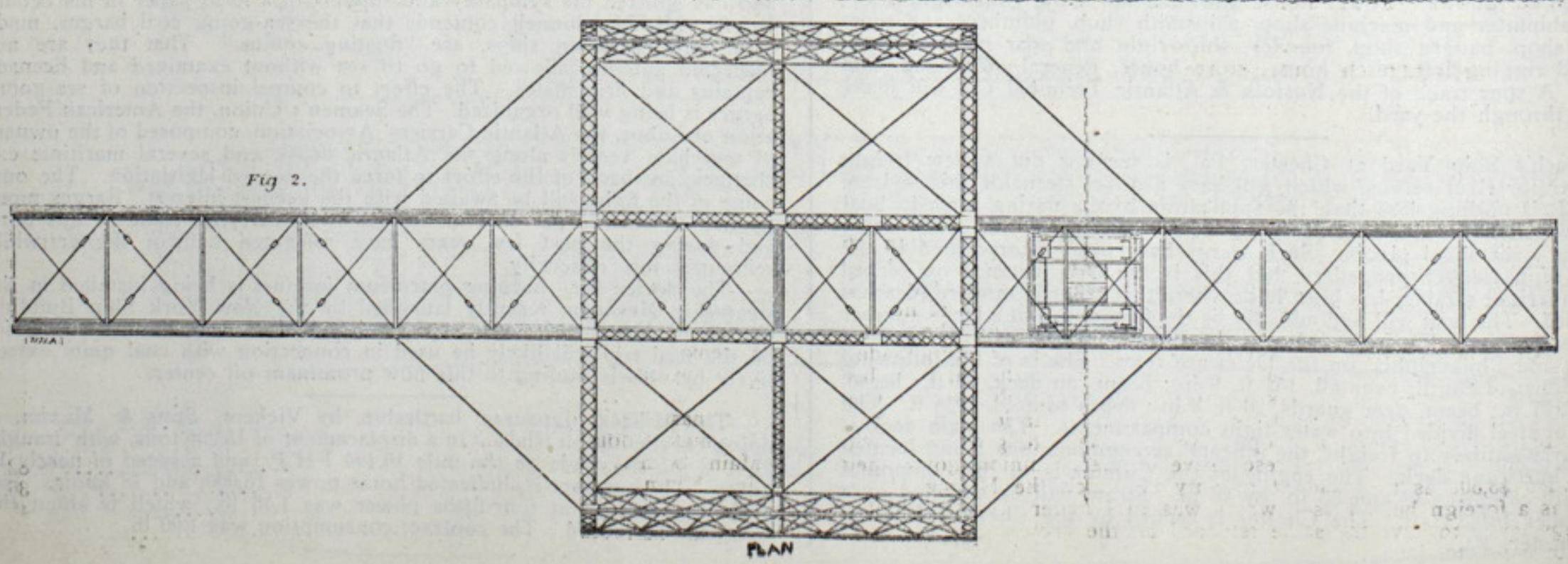
AN AMERICAN ELECTRIC GANTRY CRANE IN FRANCE.

The methods of dealing with the storing and transportation of stocks of raw material by gantry or other cranes which have attained such vogue in the United States, and particularly in the lake region, is being introduced abroad by American companies. The Wellman-Seaver Engineering Co. of Cleveland, O., has recently erected a large gantry crane at the works of the Societe Anonyme de Micheville, France. The crane shown has a total cross-travel of trolley of nearly 200 ft. and the area commanded by the crane can be increased by prolonging the main tracks. A system of this character is capable of indefinite expansion. The structure, as shown in Figs. 1 to 3, is supported on four vertical legs, each resting on a two-wheeled truck running on one rail. Thus one pair of legs is supported by each rail, the distance apart of the legs in the direction of motion being unusually great—viz., 66 ft.—so that 60-ft. bars can be carried across without being turned round. The gauge of the rails is 52 ft., which insures stability for the structure. The space between the rails can be utilized for storage purposes, so that the area available is the whole of a rectangle whose breadth is the cross travel of the trolley—viz., 197 ft.—and whose length is the length of the track. The structure is made as light as possible, consistent with strength, and the pin-jointed principle usual in American bridge building is adhered to. By this means all the members are in pure tension or compression, and great strength is obtained, considering the weight of material used. The design of the central structure is arranged so that the legs transmitting the weight to the track wheels are perpendicular, thus allowing a 60-ft. piece to be raised to a considerable elevation, and carried through as indicated in Fig. 3. The knee-joints are properly stayed in two directions, giving a thoroughly rigid structure, with an absence of redundant parts. On account of the long wheelbase, and in order to prevent the legs separating under the load, the two legs on each side are connected by a tension member, supported by a track wheel in the center. Allowance for expansion and contraction of the girders is made as follows: The top side of each truck is fitted with a steel cup having an elongated hemispherical form, the major axis being placed across the direction of the track. A steel ball is placed in each cup, while the under side of the main supporting legs of the crane are fitted with steel hemispherical cups resting in turn on the tops of these



A WELLMAN-SEAVER ELECTRIC GANTRY CRANE IN FRANCE.



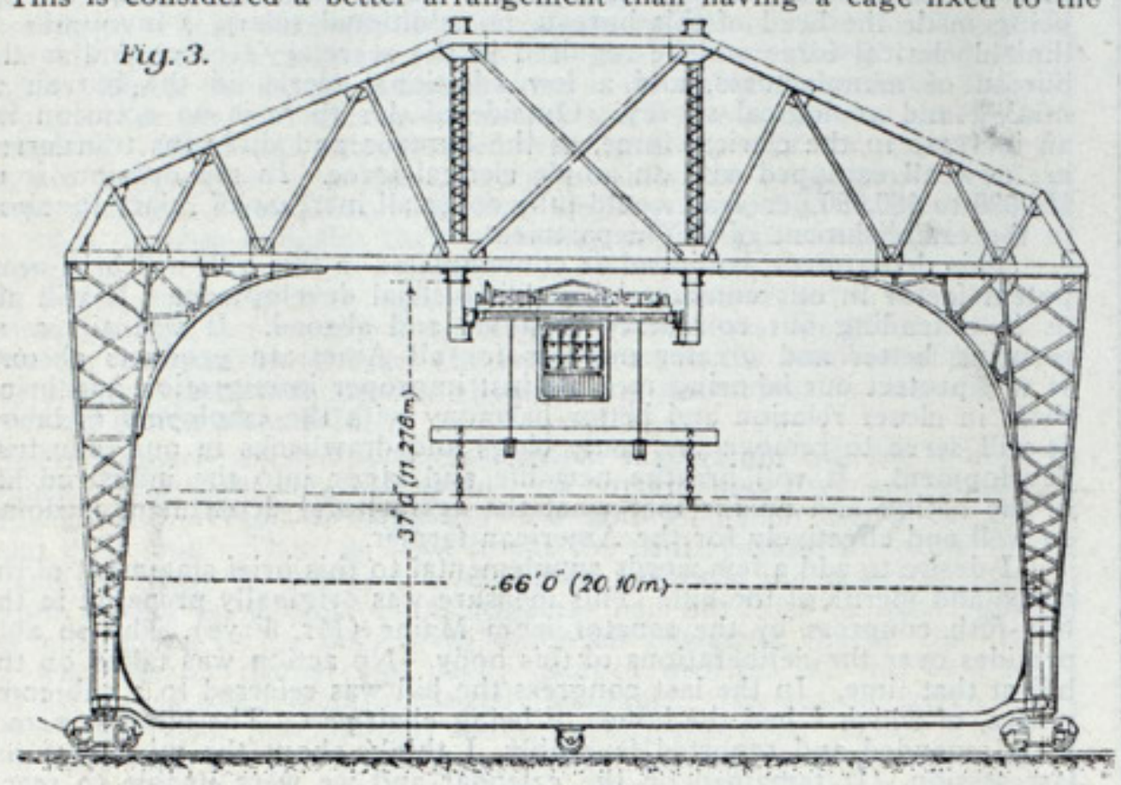


balls. In case of expansion or contraction, the ball travels along the longer axis of the lower cup. This also provides against want of perfect alignment of the tracks themselves. The balls in addition form universal joints between the trucks and the crane, allowing for inequalities in the rails. Efficient bracing is arranged to allow for side wind pressure.

The trolley is built with a steel frame in the ordinary way. The design of shafts and gears is so arranged as to allow great ease of inspection and accessibility, the whole arrangement permitting any one shaft to be taken out without disturbing another. There are four hoisting drums and four ropes, supporting in pairs two cross-beams, which in turn carry a central beam from which the chains holding the load are slung. The four drums are arranged in pairs upon two shafts, the latter being geared together. This arrangement insures complete absence of any loose swinging or twisting of the load, which is kept under perfect control, the position of which at any instant is definite and under the will of the operator.

The operator's cage is attached to the trolley, and travels with it. This is considered a better arrangement than having a cage fixed to the

Fig. 3.



SECTION.

structure, since the operator can always see exactly what he is doing, being at all times vertically above the load. It further enables the large amount of rope and gear necessary where a fixed cage is used to be dispensed with. All the motors are electric, and operated by current which is taken from two wires running parallel with the track.

A brake is provided for locking the crane upon the tracks, which precaution is specially necessary in high structures exposed to strong wind. For the hoisting gear electrical brakes are fitted upon the motor shafts. These brakes are kept in action by springs and are only released when current is applied to the motors. This insures safety from dropping the load through loss of current owing to any cause. An additional mechanical retaining brake is also fitted as near to the hoisting drums as possible, which comes into action in case of any accident happening to the gear between the hoisting motors and the drums, in the event of which the electric brake referred to would have no power to prevent the load running down. This mechanical brake is in action at all times, except when the hoisting motor is hoisting or lowering, enough current being used in the latter case to cause the mechanical brake to be released. Safety is thus obtained either from loss of current or failure of the mechanism.

The electrical equipment is made for direct current of 500 volts. The motors are made by the Westinghouse Company of Pittsburgh, and adapted specially for long and continued service. The power and speeds are as follows:

	Horse-Power.	Speed with full load. Ft. per min.
Hoisting	100	100
Longitudinal traveling, two motors of.....(each)	100	300
Cross traverse of trolley	25	300 to 600

The motors are so designed that they will stand continuous overloading of 25 per cent., or 50 per cent. for a few minutes, or 100 per cent. for a few seconds—as, for instance, during acceleration, when starting the crane from rest. The controllers are of the Dinkey type, being self-contained, with no outside resistances. They are designed of ample capacity to avoid over-heating, and control the motors equally well in both directions.

DEFECT IN CANADIAN CUSTOMS ACT.

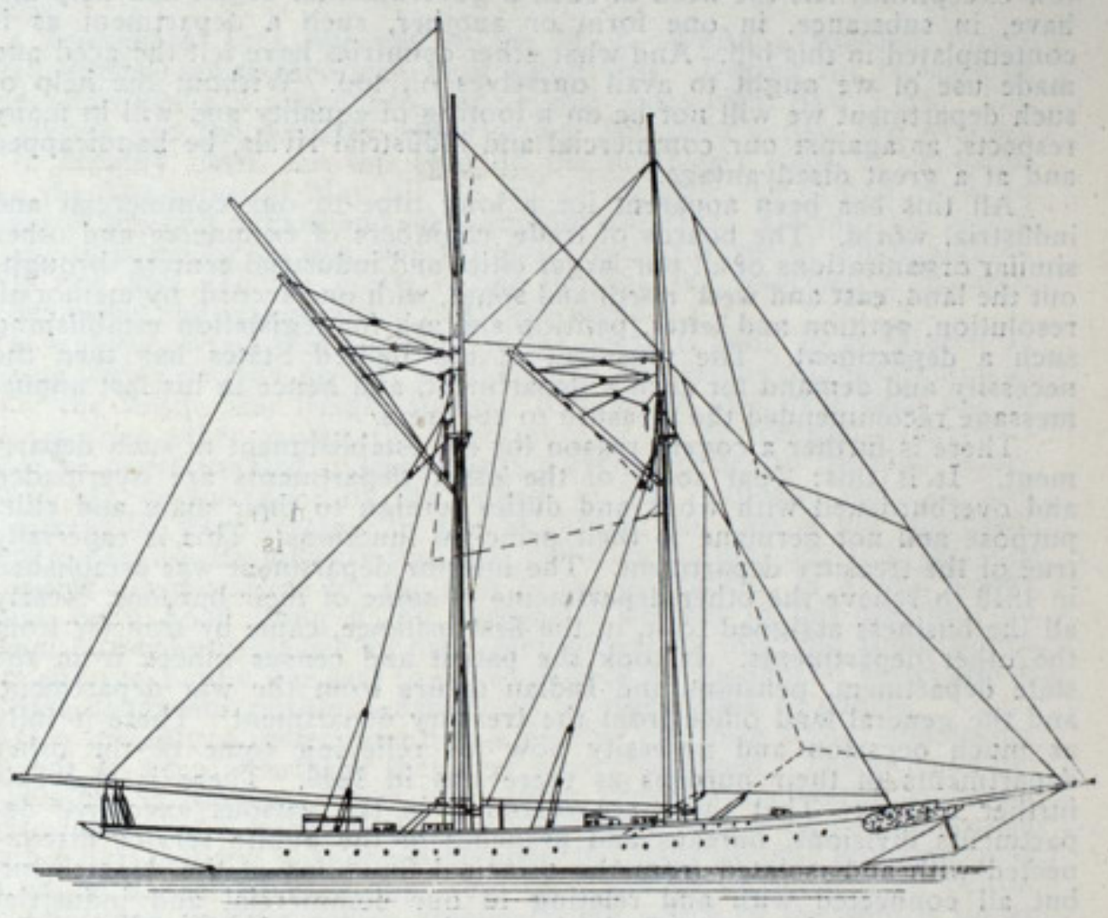
The recent judgment of Justice Burbidge in the exchequer court upon the petition of right presented by the Algoma Central Railway Co., asking for the return of $3,500 paid under protest to the collector of customs at Sault Ste. Marie, Ont., on the occasion of the registration there of the steamboat Minnie M., brings into prominence a serious defect in the customs tariff act of 1897. In fact the intention of the government was to promote ship building in Canada by imposing a duty upon foreign-built vessels, but, according to the decision rendered, this has been defeated by a defect in the act which parliament alone can rectify. The Minnie M. was built of wood at Detroit, Mich., in 1884, and at the time of her purchase by the Algoma Central Railway, was registered at the port of Mackinac, Mich. In order to make her available for the coasting trade in Canada a British register was necessary, and while this could have been obtained without question by making a trip to St. John's, Nfld., the owners applied to the collector of customs at Sault Ste. Marie, Ont., who is authorized by the imperial acts operative in Canada to give registration papers. The official, as a representative of the dominion government, demanded $3,500 as the amount of duty to which the Minnie M. was liable as a foreign built vessel, which was paid under protest, and proceedings taken to have the same returned on the ground that the vessel was not liable to duty.

The question at issue was the right of the government to impose a duty upon the Minnie M. The judgment sets forth that there is no repugnancy between a statute imposing a duty on foreign-built ships on application for registry in Canada and the imperial acts operating in Canada, but shows that "where a tax or charge is imposed, express language is said to be indispensable; and the intention to impose a charge on the subject must be shown by clear and unambiguous language." The question then before the court resolved itself into whether or not the duty on foreign built ships had been explicitly imposed by the customs tariff act of 1897. Item 409 in schedule A of the act, under which the collector of customs at Sault Ste. Marie assessed the duty on the Minnie M. at $3,500, does not contain any words authorizing the levying of such a duty, and though a provision to impose a duty would be out of place in a schedule, yet if it were there the courts would have to give effect to it. The fourth section of the act is the section imposing duties, as it provides that "there shall be levied and collected" duties as set forth in the schedule upon all "goods enumerated" or "referred to as unenumerated," when "such goods are imported into Canada or taken out of warehouse for consumption therein." A ship does not come within the definition of goods as given in section 3 of the act; "neither can a ship with propriety be said to be imported; and it would be absurd to refer to it as taken out of warehouse for consumption in Canada." Therefore, while "it was the intention of parliament to impose the duties mentioned in the schedule, no authority but parliament could supply the omission and make the act effective for its purpose." The court, therefore, ordered the $3,500 paid under protest to be returned to the Algoma Central Railway Co., leaving the foreign-built ship Minnie M. on the register.

EMPEROR WILLIAM'S YACHT.

Emperor William's yacht, Meteor III, which the Townsend & Downey Ship Building & Repair Co., Shooter's Island, N. Y., is building, is of the following general dimensions: Length, 161 ft. over all; 120 ft. on the water line; 27 ft. beam; 18 ft. 6 in. depth, and 15 ft. draught. She is a keel boat with an S section quite full below. The load water line is not only rather fine at both ends but it shows a marked hollow at the extreme fore end. The yacht is built of steel throughout.

A. Cary Smith, the designer of the yacht, is the son of a New York clergyman and was originally a marine artist by profession. He tried his hand at designing and his first success was the cutter Vindex, which



SAIL PLAN OF THE GERMAN EMPEROR'S NEW SCHOONER YACHT METEOR III.

he designed in 1871. This cutter was built of iron. Since then Mr. Smith has turned out many fast yachts. In 1877 he turned out the schooner Prospero, the first yacht to be fitted with a pole bowsprit. The schooner Intrepid, for Lloyd Phœnix, which came the next year, the Fortuna in 1883, Iroquois in 1886, Yampa in 1887, Lasca in 1892, Amorita in 1896, Genesee in 1900, and Muriel and Elmina in 1901 are notable examples of his work. With Mr. Smith is associated Henry G. Barbee, who has studied naval architecture in this country and abroad.

The following table shows at a glance the spar dimensions of the new yacht:

Length from end of boom to tip of bowsprit	195.5 ft.
Length of base line of measurement	192 "
Bowsprit outboard	24 "
From fore side of foremast to forward point of measurement	71 "
Mainmast, deck to cap	89 "
Main topmast	60 "
Doublings	17 "
Mainmast, deck to truck	132 "
Mainmast, boom to topsail halyard block	119 "
Foremast, deck to cap	84 "
Fore topmast	55 "
Doublings	16 "
Foremast, deck to truck	123 "
Foremast, boom to topsail halyard block	114 "
Main boom	82 "
Fore boom	36 "
Main gaff	48 "
Fore gaff	36 "
Sail area	11,612 square "

SCOPE OF THE PROPOSED DEPARTMENT OF COMMERCE.

Senator Nelson, who has charge of the bill to create the new department of commerce, has made the following statement of its scope and purposes:

There is among our executive departments no department that stands charged with the care, promotion and development of our vast commercial, manufacturing, mining and other industrial enterprises. The agricultural interests of the country are well served and taken care of by the agricultural department, but the other great industries of our country, as well as our great commerce, are without any direct governmental guidance and assistance. These vast interests of our people—the great throbbings of our economic and industrial life—have no governmental head, direction or guidance, but are left to shift for themselves without any system, harmony, or unity of action, so essential to thorough and permanent progress. Such a condition is not only hampering in dealing with ourselves, but is much more embarrassing, retarding and injurious when we come to compete with other nations and enter the competitive field of the world's traffic and commerce. To enter the markets of foreign countries effectively and systematically we must thoroughly familiarize ourselves with the laws, trade conditions, resources and wants of those countries. This can only be done systematically and effectively through an organ of our government charged with such task—the gathering and dissemination of the necessary information.

This matter is now becoming more important and more urgent than ever before. Our productive capacity, pressed by an abundance of capital, labor and raw material, far exceeds our own wants, and will so continue with increased force and persistence, so that the great problem is and will continue to be to secure and hold greater and more extensive markets abroad. To American capital, American labor and American enterprise this is a most vital question. Without greater markets abroad industrial stagnation and congestion, superinduced by too rapid production, are liable at any time to set in and produce a reaction that will be demoralizing, damaging and destructive to all classes of our people and will not only bring an economic convulsion, but will also raise serious social problems, difficult to meet and adjust. There is, therefore, from this standpoint and view, an urgent demand for a department of commerce, to act as an intermediary and support for the American people in meeting and solving these problems.

All the other countries of the world, great and small, have, with but few exceptions, felt the need of such a governmental organ and help and have, in substance, in one form or another, such a department as is contemplated in this bill. And what other countries have felt the need and made use of we ought to avail ourselves of, too. Without the help of such department we will not be on a footing of equality and will in many respects, as against our commercial and industrial rivals, be handicapped and at a great disadvantage.

All this has been apparent for a long time to our commercial and industrial world. The boards of trade, chambers of commerce and other similar organizations of all our larger cities and industrial centers throughout the land, east and west, north and south, with one accord, by memorial, resolution, petition and letter, petition and ask for legislation establishing such a department. The president of the United States has seen the necessity and demand for such a department, and hence in his last annual message recommended the measure to congress.

There is further a cogent reason for the establishment of such department. It is this: That some of the other departments are overloaded and overburdened with work and duties foreign to their main and chief purpose and not germane to their principal functions. This is especially true of the treasury department. The interior department was established in 1849 to relieve the other departments of some of their burdens. Nearly all the business assigned to it, in the first instance, came by transfer from the other departments. It took the patent and census offices from the state department, pensions and Indian affairs from the war department, and the general land office from the treasury department. There is fully as much occasion and necessity now for relieving some of the other departments of their burdens as there was in 1849. There is also this further reason: That there are scattered in the various executive departments divisions, bureaus and branches of the public service disconnected with and isolated from the principal functions of the department, but all connected with and relating to our commercial and industrial development. If these several divisions and branches of the public service can be grouped under one head and be made to articulate in harmony and for a common purpose and end, instead of being isolated, they will become much more useful and effective and accomplish much more good, both singly and in the aggregate.

The bill establishing the department of commerce makes it "the province and duty of the department to foster, promote and develop the foreign and domestic commerce, the mining, manufacturing, shipping, and fishery industries, the labor interests, and the transportation facilities of the United States." It establishes two new bureaus, which do not now exist—a bureau of manufactures, to foster, promote and develop the various manufacturing industries and markets for the same at home and abroad, and a bureau of mining, to which is attached the geological survey, charged with the duty of fostering, promoting and developing our various mining industries. The bill transfers from the treatury department the following branches of the public service, which are not germane and have not any direct connection with the fiscal or financial affairs of the government, to wit.: Life-saving, lighthouse, marine hospital and steamboat inspection service, bureau of navigation and shipping commissioners, bureau of immigration, bureau of statistics, and coast and geodetic survey. and from the state department the bureau of foreign commerce, and consolidates with the bureau of statistics.

All these matters pertain not to the financial or fiscal affairs of the government, but senators can all see that they have a direct relation to the vast shipping industries of the country. The bill transfers from the interior department, the census and patent offices, and the geological survey, which is attached to the new bureau of mining. The department of labor and the commissioner of fish and fisheries, both outside of any executive department, are also transferred to the new department.

It will be perceived by a mere inspection that the branches of the public service thus transferred to the department of commerce are all connected with and germane to the work and duties assigned to the new department. By securing harmony and cooperation under one head, and by causing them to articulate together and for one great common purpose, all these branches of the public service will become more useful and effective, and in the aggregate will be able effectively to carry out and discharge the work and duties of the new department.

While the consular service, on account of its quasi diplomatic character, in some cases is still retained by the state department, nevertheless all our consular representatives are, by the provisions of this bill, required, under the direction of the secretary of commerce, to gather and compile, from time to time, useful and material information and statistics in respect to the commerce, industries, and markets of the countries and places to which such consular officers are accredited, and to send to the secretary reports quarterly, or oftener if required, of the information and statistics thus gathered and compiled.

The increase in salaries is moderate and quite limited—$8,000 for the secretary, $4,000 for the assistant secretary, and $3,000 for the chief of the bureau of manufactures. The geological survey being transferred and united with the bureau of mining, and the chief of the geological survey being made the head of this bureau, no additional salary is involved. A limited clerical force will be required in the secretary's office and in the bureau of manufactures, and a few additional clerks in the bureau of mining and geological survey. Outside of this there is no occasion for an increase in the clerical force, as the bureaus and divisions transferred are now all equipped with an ample clerical force. In my opinion, from $50,000 to $60,000 per year would fully cover all increase of salary involved in the establishment of this department.

This department, equipped as contemplated in this bill, will be a most potent factor in our commercial and industrial development. It will aid us in extending our commerce at home and abroad. It will aid us in securing better and greater markets for all American products abroad. It will protect our laboring men against improper immigration and bring them in closer relation and better harmony with the employers of labor. It will serve to remove the many clogs and drawbacks in our industrial development. It will breathe new life and vigor into the industrial life of the nation and do for that what the agricultural department is doing so well and effectively for the American farmer.

I desire to add a few words supplemental to this brief statement of the scope and merits of the bill. This measure was originally prepared in the fifty-fifth congress by the senator from Maine (Mr. Frye), who so ably presides over the deliberations of this body. No action was taken on the bill at that time. In the last congress the bill was referred to a sub-committee, of which I had the honor of being chairman. The bill was somewhat amended and reported favorably, I think, about the middle of the last session. It remained on the calendar and we were unable to reach it at that time. The bill is now substantially the same, with some changes in phraseology to improve its language, as that which was on the calendar of this body during the latter half of the last session.

MR. SCHWAB RETURNS BROADENED.

Mr. Charles M. Schwab, president of the United States Steel Corporation, has returned from Europe, where, he says, he found unexampled opportunities to gather important information.

"I found," he said, "that all over Europe wherever I went there was the greatest curiosity in regard to the corporation among the men who are interested in these matters, and all of them are watching its course with attention. In all the countries I visited I could not find that the men of affairs regarded the corporation with animosity or with ill feeling, but I did find that all of them had the greatest interest in its plans and objects. None of them seemed to be unfriendly. Many of them were full of wonder as to how so large a corporation could be managed successfully, and all of them asked questions about the manner in which it was organized and the way in which it conducted its business."

"Did you find that they feared that the corporation would try to take away the trade of the steel companies in Europe, or that if such an attempt was made by the corporation, it would be successful?"

"No," said Mr. Schwab, "and I told them that the corporation had no intention of invading the field in which foreign companies are operating. I told them the corporation had no such thought, let alone any such plan. I did tell them frankly, however, that the corporation was in business to compete for any trade that was to be had in the new countries, especially in the east and in South Africa.

"I told them also that I thought that because of the improved methods and the vast economies that are possible through the co-operation of so many companies under one general direction, it would be possible for us to get the trade. I said, too, that if we did not get it it would be the fault of the United States government for not giving us the ships to carry the goods to the countries where they are wanted. We look to congress to make provision for the protection of our shipping. We will look after manufacturing. I said in a speech delivered in Chicago that any combination of business enterprises organized for other purpose than the reduction of cost and the increase of output is placed upon a false basis and I return from my visit to Europe feeling more than ever impressed with the truth of that proposition. I come back with my ideas broadened and my enthusiasm unbounded. Heretofore I have looked upon our great combination of the steel industries of this country as perhaps nothing more than an ordinary business venture of great magnitude, but after hearing the views of the business men of the old world I find that I have, if anything, underrated our undertaking. We are now more than ever ready to demonstrate that the greater the scope of the combination the greater the possibilities for economy and consequently the greater the possibilities for the reduction of costs. With these objects in view we must have our great plants equipped and manned to perfection and no care or proper expense must be spared to keep those plants modern and at the highest point that ingenuity, skill and enterprise can reach."

Percy & Small, Bath, Me., are building a five-masted schooner, which will be launched early in April ready for sea. She is 255 ft. long on keel, 45 ft. beam and 27½ ft. depth of hold; capacity about 4,000 tons. The new vessel is to be named Cora F. Cressey and is to be commanded by Capt. Wm. F. Harding.

Following are the officers of the Richardson Transportation Co. for the year 1902: W. C. Richardson, president, treasurer and general manager; H. C. Ellison, vice-president; F. S. Masten, secretary.

DERELICT SHIPS.

BY LAWRENCE IRWELL.

An abandoned ship drifting hither and thither before boisterous winds is a pitiable sight to sailors at any time. Such vessels, moreover, are as great a danger to navigation as any uncharted rock heaved up by volcanic action from the fathomless depth of the ocean. Some are seen entirely dismasted, with their spars crashing together; others have their masts still standing, but the sails have been blown into shreds, which flap against the swaying yards, while the wind whistles around the chafing cordage. Having nobody to guide them and often no rudders, these deserted hulls await the final break-up, which eventually comes to all of them. Nevertheless, it is true that these abandoned ships defy the war of the elements for a long time; and it is said that those of us who live on land do not realize that these floating wrecks remain intact sufficiently long to be a danger to the best ships on the ocean. Derelicts have probably proved fatal to some vessels which have disappeared as though they had never existed, but as a collision with an iceberg may have the same result, it is impossible to tell to what the loss of certain vessels is to be attributed, even if all causes of disaster, except the two named above, could be excluded. Upon the North Atlantic there is probably more traffic than upon any other sea, and after every severe storm the number of derelicts is increased. Worn-out ships loaded with lumber, unfit for any other trade, are believed to constitute a very considerable proportion of the deserted vessels. These frequently float keel uppermost and as nothing but a mass of foam indicates their presence, the danger to navigation is very great.

It would appear at first sight as if ships were now more frequently abandoned than was formerly the case, but it is not possible to make any satisfactory comparison, because the ratio between the number of ships left derelict and the total number afloat in any given year is only available for the period since 1875.

There formerly existed an ancient axiom that freight was the mother of wages. If a ship were abandoned, the freight was lost, and consequently no wages could be claimed by the sailors on their arrival in port without their ship. Then, as now, it was the usual custom to insure the ship and the cargo to any port in the world. Should the vessel be lost, everyone having an interest in the property had—and has—a legal right to be indemnified to the full extent which his insurance covers. But the sailor who lost his clothes and barely escaped with his life was held to forfeit his wages which were not legally insurable. The reasons given by eminent lawyers for this anomoly were certainly plausible. When a man is well aware that the loss of his vessel would leave him without any claim for remuneration for his services, and that, on the other hand, by remaining on board his disabled ship, he insured certainty of payment, he would be very chary of deserting his ship. Seamen, however, as a class, are well known to be extremely loath to desert their ship, and, as the law now stands, both here and in England, a ship's crew is entitled to payment of wages up to the date of the abandonment of the vessel. It has been suggested that a sailor's wages ought to continue until he reaches his home port, provided he gets there without unreasonable delay, and a great deal might be written in favor of this suggestion.

About a dozen years ago a case occurred which is, fortunately, quite uncommon. A large water-logged derelict was picked up and towed into port. Upon examination it was discovered that the cargo consisted of almost valueless lumber, and holes had been bored in the ship's sides. Her captain, it was discovered, had conspired with the shipper of the cargo to scuttle the ship in order that the insurance might be obtained. Had she gone to pieces, as the conspirators intended she should, their trick would have succeeded, and the insurance would doubtless have been paid. As it was, her owners were saddled with a long and expensive law suit to recover the ship from her salvors, for every deserted vessel is not a derelict in the eyes of the law. In other words, although abandoned, a vessel may be reclaimed by her owners or by her crew, even though strangers may have taken possession of her in the absence of those whose duty it was to have been in possession. A ship to be legally derelict must have been abandoned, not only without hope of recovery, but also without any intention upon the part of the crew of returning. It has been said that no vessel is a legal derelict if a live cat or dog can be found upon it, for the presence of either animal is supposed to be evidence that the crew intends to return!

There is a case on record in which the Norwegian Familiens Minde encountered a Portuguese barque in mid-Atlantic making signals of distress. Both ships "hove-to," and in a short time all the Portuguese abandoned their vessel upon the ground that she was unseaworthy and that it was impossible to bring her into port; and as her late crew refused to return, the mate and three men of the Familiens Minde determined to try what they could do. Strange as it may seem, she arrived at a British port before her salvor. Upon the arrival of the latter the Portuguese mate was so affected at the news that he committed suicide. Had not these plucky Norwegians brought the derelict to port she might have drifted about for many months, and, being in fairly good condition, she would have been a formidable obstruction to both steamers and sailing vessels.

The United States hydrographic office has long been aware of the importance of making known the probable position of derelicts and formidable obstructions in the North Atlantic. The charts made by this office are given to interested persons without any charge, and at almost all the seaports the latest information is easily obtainable from the naval authorities.

Sailors upon water-logged ships in mid-ocean are frequently compelled to endure terrible hardships, sometimes ending in a horrible death from starvation. The story of the Caledonian encountering the full force of a terrible storm and becoming unmanagable is now over half a century old and has been told many times. Although the ship was half filled with water, her crew managed to exist for almost two weeks. The Russian ship Dygden rescued the survivors from their perilous position just as they were about to kill the cabin boy and use his body for food. Extraordinary heroism was displayed by the mate of the Russian ship, who in very bad weather rescued the crew of the Caledonian at the imminent risk of his own life. Some English merchants subscribed for and presented to the Dygden's mate a ship named British Gratitude as a reward for his services.

The history of the Annie Johnson of San Francisco is interesting. Originally she belonged to Liverpool, England, and was known as the Ada Ireland. She was abandoned in flames owing to the spontaneous combustion of her cargo of coal in the fall of 1876, about two miles from the Marquesas islands (Polynesia), which her crew reached in open boats, after twenty-five days, with the loss of only one man. The burning derelict drifted westward to Tahiti, a distance of nearly twenty-five hundred miles, and was towed into port by a French man-of-war in the summer of 1877, about eight months after her abandonment. Her coal cargo continued to burn until May, 1878, when she was repaired, re-named and placed under the stars and stripes.

The Oriflamme was abandoned under similar circumstances in 1881. Four months after her crew had left her she was passed about 2,000 miles west of the position she was in when abandoned. In February, 1882, she drifted ashore on Raratonga, one of the Cook islands, and was visited by the natives who brought away her bell upon which was engraved "Oriflamme, 1865." She subsequently sank in deep water, after drifting over 2,800 miles in eight months.

As a rule derelict ships are wooden vessels, as iron and steel ships are better looked after and are kept in good condition. Authentic accounts of the abandonment of either iron or steel ships have not come under the writer's notice, but this does not necessarily prove that no such case has occurred.

One of the most remarkable derelicts on the North Atlantic was the schooner Twenty One Friends. She was observed in March, 1885, about 170 miles from Chesapeake bay; four months later she was 2,000 miles northeast of that position. Then she drifted toward the north coast of Spain and was last seen in the vicinity of Cape Finisterre. She had been reported by no fewer than twenty vessels at intervals of many weeks. How many more ships have to congratulate themselves upon having unwittingly given her a wide berth, nobody can tell. The gulf stream took her right across the Atlantic in about eight months. Some such ship might easily have given rise to the old sailor's superstition with respect to the Flying Dutchman doomed to be continually met off the Cape of Good Hope.

The ship John T. Berry, bound from Philadelphia to Japan, with a cargo of petroleum, caught fire and was abandoned in the summer of 1888. In the following summer she was discovered seven miles off the coast of Newcastle, New South Wales. Her anchors had fallen overboard and had held her right in the track of ships making for the above named port. She happened to get into the great ocean currents and aided by breezes, made a remarkable drift. Other ships which have been left in parts of the ocean where winds and currents are variable and of little strength, have been known to remain in almost the same position for months.

A remarkable case was that of the W. L. White, a wooden, three-masted, lumber-laden schooner, built about 1884. During the blizzard of March, 1888, she was abandoned some eighty miles from New York. The gulf stream and the westerly winds drifted her right across the Atlantic and in January, 1889, she was seen off the northwest coast of Scotland. From the beginning of May till the end of October she drifted about in and out of the gulf stream and the Labrador currents. During this period she was reported by no less than thirty-six vessels, three of which sighted her in one day. In her cruise of ten months she traversed a distance of 5,000 miles and was reported forty-five times.

It is quite certain that any ship on the ocean is liable to be injured by collision with a derelict, so that whether such mysterious disappearances as that of the White Star freight steamer Naronic in 1893 have been due to icebergs or to other causes, the importance of the destruction of derelicts cannot be overestimated. Occasionally a crew sets fire to the ship before leaving her, as was done by the captain of the Veendam, when he and his passengers were rescued by the St. Louis; but this is not the usual practice, because the officers fear that evil tongues may say that the ship was purposely destroyed for the sake of the insurance. It would, nevertheless, be a good thing if, on meeting a derelict in fair weather, an attempt be made to set her on fire. Men-of-war do this, and about fifteen years ago the Yantic was sent to sea to destroy an abandoned vessel which was in a dangerous position—dangerous to other ships, of course.

It is difficult to understand how a derelict can keep afloat; and seeing that they do keep afloat why they ever were abandoned. The explanation is probably as follows: They keep afloat because their cargo generally happens to be of a buoyant character, as is the case with vessels loaded with lumber; they are abandoned because they have become unmanageable and are in danger of capsizing. No food can be obtained from below, and when bad weather comes practically the whole of the ship is under water and the sailors are compelled to take to the rigging. Such vessels hold together because they are well built; but it would not be correct to call them seaworthy.

The writer has no recent data at hand, but in February, 1893, there were no less than thirty-five derelict vessels on the Atlantic and more than half of them were in the track of the great steamers. In the course of any year there are probably at least eight collisions between transatlantic vessels and abandoned ships.

For many years we have had on land a civilian army, a part of the duty of the members of which is to arrest those individuals who are dangerous to others or to themselves. Has not the time been reached when a system of maritime police should be inaugurated by the shipowning nations of the world for the purpose of protecting vessels from such dangers as derelicts? The subject ought to be thoroughly investigated and reported upon with as little delay as possible.

Three-masted schooner Marion N. Cobb was launched at the Cobb-Batle yards, Rockland, Me., last week. The schooner is 150.7 ft. long, 34.9 ft. beam and 11.8 ft. deep. Her frame is of hard wood and hackmatack, and the planking is of hard pine. She is a single decker, with a short poop deck to take in the mizzenmast. The three masts are of Oregon pine, each 88 ft. long, one 25 in. and two 24 in. in diameter. The topmasts are of spruce, 48 ft. long, one 15 in. and two 14 in. in diameter; her spanker boom is 60 ft., main and foreboom 41 ft., jibboom 51 ft. 15½ in. in the cap. She is fitted with a double drum hoister, 7x10 in. cylinder engine, 42-in. boiler and 4-in. suction pump and feed pump. She has the Knowlton Bros.' windlass, castings and blocks.

Mr. Charles Schofield, superintendent of the Eastern Ship Building Co., New London, Conn., has resigned. It is understood that Mr. Schofield is organizing a new ship building company.

STEEL SHIP BUILDING IN CANADA.

MR. G. B. HUNTER ELABORATES HIS VIEWS UPON THE SUBJECT — FAST CANADIAN STEAMSHIP SERVICE.

In its last issue the Review gave brief space to an interview with Mr. G. B. Hunter of the firm of Swan, Hunter & Co., Newcastle-on-Tyne, in which he reported his observations on the subject of steel ship building in Canada and the possibility of a fast steamship service between Great Britain and the dominion. The Montreal Star has now secured a further expression from Mr. Hunter which is supplemental to that already published in the Review. He sees no immediate prospect of such an industry being established, but sees, however, unlimited possibilities.

"An important item which must be carefully considered in the establishment of a steel ship building enterprise," said he, "is the labor problem. From what I have seen during my visits to Canada I believe that there is a splendid class of material in the dominion only awaiting the necessary training and experience. It is my firm conviction that the labor which can be obtained for the purpose of carrying on a great steel ship building enterprise in Canada will prove quite adequate and worthy of the great natural advantage of the country.

"Remember, however, that labor will likely remain a prominent factor in this industry, for the reason that it will be more expensive in Canada than in either Germany or in Great Britain. It will, moreover, likely remain so. In Great Britain, for instance, during a dull period in one ship building industry there is usually a very material reduction in the cost of labor to the employer. Laborers in that country frequently, during a period of depression, go to the heads of the various ship building industries throughout the country and voluntarily offer to work at a reduced figure until the period of stagnation has passed. This, of course, is occasionally a great factor in the situation. I have myself seen the price of labor fluctuate as much as 25 per cent. from the entirely voluntary action of the workmen themselves. Taking this fact into consideration, therefore, it is quite reasonable to suppose that the normal difference as to labor in favor of the British ship builder as against the Canadian, might be still further increased under certain circumstances.

"Notwithstanding, however, the somewhat heavy handicap that Canada would have at the outset in establishing a steel ship building industry, she would, in a reasonable time, be in a much superior position for the energetic and successful prosecution of this enterprise than either Great Britain, Germany or the United States.

"I am a free trader," continued Mr. Hunter, impressively, "but in this instance it seems to me to be clearly necessary for the government to aid the industry at the start. At present there is legislative encouragement ranging from $1.15 to $1.55 per ton on the building of steel ships in Canada, in view of the disabilities, which the industry would suffer in its early stages, I am of the opinion that it would be necessary to raise the legislative encouragement to about $5 per ton in order to equalize the situation with those prevailing in Great Britain, Germany and the United States. With this aid stipulated, a steel ship building industry can be established in Canada on a successful basis.

"I can plainly see the cost of manufacturing steel ships in Canada greatly cheapened in the future. I am persuaded that the cheapest steel ships in the world can be produced in Nova Scotia. But, remember, that the cost of skilled labor will probably always remain higher there than in Europe, but, to counterbalance this, I confidently anticipate a very skilled class of workmen springing up, which will do credit to the country. The higher cost of labor, moreover, will be more than offset by the cheapness of steel production in other directions.

"Canada can beat the United States in the matter of steel ship building for many reasons. Especially will this prove true as long as the present United States tariff policy is maintained.

"But this question of a steel ship building industry is a very broad one and extremely far reaching in its scope. It does not apply merely to Nova Scotia and the construction of tonnage for the Atlantic, but must be considered in its bearing upon the shipping interests of the great lakes and the Pacific. Legislation on the subject would have to be so framed as to cover the possibilities of industries springing up at these different points so widely separated. At present Canadian tonnage is somewhat scarce on the great lakes, and it might be advantageous for Canada to materially increase her tonnage in these waters. I have personally seen ship building carried on at the Pacific coast, but I understand the plates are imported from the United States.

"At the present time, and under present conditions, I can see no chance of starting a steel ship building plant in Nova Scotia with a reasonable chance of success. Canada, however, if she wants it and thinks it worth while to encourage such an enterprise, can have a successful steel ship building industry. That much is certain.

"As for the proposed Canadian fast Atlantic passenger and mail service, much the same thing can be said; Canada can have it if she desires it. I would like to emphasize one very important factor in this problem, and that is that Canada has the shortest possible sea route between this continent and Europe. Nothing can rob her of this, and I think it should be the determining consideration in deciding upon what sort of service shall be put on the route. Personally, considering the short water route, I am in favor of a fast service—in fact, a very fast service—so fast that no other steamship service on the Atlantic could compete with it. What is the use of throwing away and rendering null and void the one great advantage which Canada has above all competitors by inaugurating a service which, while fairly fast for Canada, would lose all its advantage in distance, and would only be as fast as the present New York service? I think that Canada in inaugurating its fast Atlantic service should ever keep this point in mind, and not nullify by the moderate speed of its boats the one pre-eminent advantage of geographical situation which she enjoys.

"In my way of thinking, Canada, in its Fast Atlantic Steamship line, should have the fastest mail and steamship service between Europe and America.

"Canada can have such a service if the country thinks it is desirable. I am a little doubtful, however, whether Canada is quite aware of the importance of this subject or of the greatness of the country's present opportunity. In this connection I may say, that New York is not shutting its eyes to the facts, but, on the contrary, capitalists from that city have already got their attention firmly fixed on the Canadian route.

"As for the route, it must, as far as possible, be free of ice or fog. I make no statement as to where the Canadian terminus shall be, but I think in carrying out the proposition so as to get the best possible results the mails should be landed at some point in Nova Scotia. The steamships can proceed afterwards, if it is thought best, up the St. Lawrence. This, of course, is bound to cost more money. It will entail the use of an additional boat and the insurance charges will be much heavier, but if this feature is thought by the people to be a necessary one, it can be done. The service will cost more; that is all. But the first stopping point should be in Nova Scotia.

"If you will carefully examine the subject you will find that Canada has been practically standing still in the matter of an Atlantic mail and passenger service for the past forty years. The Cunard line as far back as 1860 used to make the passage between Liverpool and Halifax in about eleven days. There is hardly any substantial improvement in that time today in the Canadian service, whilst New York in the meantime has halved the time.

"As for the terminals, I think it would be better to have them at fixed points summer and winter. This would be less costly, would lend itself better to advertising purposes, and would, I think, be more popular in every respect with the public.

"The boats should be of sufficient speed to beat the New York route. They should be able to make the route the fastest ocean trip in the world. Personally, I may say that I am in favor of a 25-knot service, but that, of course, is a matter for consideration. The steamships must be luxuriously fitted up, and made the most attractive vessels for the wealthy class of passengers. On the other hand, they must be made thoroughly comfortable for the emigrant. The fast mail delivery must form an attractive feature. So speedy and satisfactory must this mail service be that the European mails for the east shall go by the Canadian route and across the continent by the Canadian Pacific railway, instead of going, as at present, via New York and San Francisco. It will be a very fine thing for Canada to have the cream of the world's travel streaming through the country. It cannot fail to be a magnificent advertisement for the country, and will result, I am convinced, in very much additional foreign capital coming into Canada for development purposes."

"Is it likely that turbines will be used in the proposed undertaking?"

"Turbines have been successfully worked in connection with small vessels," replied Mr. Hunter," but I am doubtful if, as yet, they warrant their application to such large masses. This, however, is a question for the future. Three vessels would be ample to perform a fast Atlantic service between Europe and a point in Nova Scotia. If, however, the voyage were continued up the St. Lawrence, another would be required, making four in all. Three fine vessels of a high rate of speed could be built for, say, $10,000,000. A fourth, however, would entail considerable additional expense. The British ship yards could handle an order of this character at present, and the conditions are becoming more favorable every day for the speedy construction and delivery of such ships.

"One of the most important factors in a Canadian fast Atlantic service is railway transportation. I think, perhaps, that it is the most important of all. To make the project a success there must be luxurious trains on both sides of the Atlantic to carry passengers from the centers of population to the termini.

"In England, for instance, there must be a special Canadian mail and passenger steamship service to run right through to the Liverpool landing stage of the line. This train should be well advertised and luxurious, catering to every taste of the traveler. He leaves London by this special and goes right on board at the schedule sailing time without a minute's loss. When he arrives in Nova Scotia over the short sea route, special trains should be in waiting. There should be one through train for Chicago which could easily beat out the time made by a tourist taking the New York route. There would soon be, say, a couple of trains necessary for Montreal and in addition to these, trains should be immediately despatched around the coast bound for Boston and New York. And, remember, United States capitalists have their eyes fixed upon this part of the proposition at the present time.

"Close connections should be a prominent feature of the trains running to and from the termini of the fast Canadian mail and passenger service. These special trains should leave centers of population for the landing stages at the very last minute which would ensure a close connection. On the arrival of the steamships the trains should be immediately despatched. There should be no waiting upon a fixed time schedule as in New York where frequently the transatlantic traveler has to wait ten hours before he or she can start on their railway journey to Chicago.

"In this connection, I may state, that the present speed of railway trains in Canada must be improved upon, if the Canadian fast line is to be made a success. I see no insurmountable obstacle in this respect, however, as I have been informed and assured on the authority of a high Canadian railway official that there is nothing to prevent trains at present from running between, say, Halifax and Montreal, at the rate of 50 miles an hour.

"There are other improvements, however, in the train service, which if carried out, could not fail to prove very attractive features of this part of the project. It is essential that improvements be made in the sleeping accommodation provided. As matters stand at present there is practically no privacy. To ladies, especially, the system falls very far short of comfort. A system of staterooms is what is required, to which the travelers can retire and rest at will undisturbed by the other passengers. There should also, of course, be a comfortable smoke room for the gentlemen, and a sitting room for the ladies, which they can occupy, for instance, while their staterooms are being attended to. Bath rooms and even a barber shop might come in time, for the additional comfort and convenience of the passenger. The Pullman car is today superseded in England. So comfortable is the passenger made while traveling at night there, that I personally always endeavor to start on my railway journey in the evening. The stateroom system there makes traveling at night a pleasure, while in Canada, I think I am not exaggerating when I say that very few passengers traveling in this country, view the approach of nightfall on the train with satisfaction.

"What passengers would such a line get? Well, at first Canada would not cut into the local New York passenger business to any great extent, but I believe such a fast line would quickly monopolize the great bulk of

the passenger business from Chicago and the western states. You are aware, perhaps, that even today, under present conditions, a very considerable number of travelers from these points go to Europe via Canadian ports. I believe that if the route is only made attractive enough that the line will undoubtedly get the necessary passengers. Canada would get the wealthy class of tourists and that, after all, is what the country is after. Men who will come into Canada, look about them, see opportunities for investment and put in their money. Moreover, those who for business reasons prefer to travel by the fastest route, will use this Canadian line and there is always a certain percentage of ocean travelers who do not wish to be out of telegraphic communication with their business longer than is absolutely necessary. By using a 25-knot service over the short Canadian ocean route this could be reduced to a matter of three days.

"Again, the route would attract a very large number of travelers for the east who would thus have a much better route than by the Suez canal, which in some seasons of the year is anything but pleasant for the traveler. Then, again, the novelty of the experience would doubtless attract many tourists who are blase as to the older established routes.

"There would have to be some arrangement for the patrons of the route and their effects from the United States to go through from the Canadian terminus in bond. There would not need to be any vexatious custom delays.

"There is, in conclusion, the imperial phase of such a fast Canadian mail and passenger service. Think how it would tend to draw still closer together Canada and the motherland! It would prove a very notable advertisement for Canada. Agents of the line would have to be established in the chief European centers, to attractively present the advantages of the route to the traveling public. I am, personally, convinced that a fast Canadian Atlantic service conducted on the above lines would prove a success and will repay a generous outlay."

SHIP YARD NOTES.

The New England Ship Building Co., Bath, Me., will build a four-masted schooner for Edward B. Boggs of Boston and others. The vessel is designed by Crowninshield of Boston. The Robert H. Stevenson will be 220 ft. 10 in. over all and 185 ft. 2 in. on the keel. Her load waterline will be 197 ft., and on this length she will draw 20 ft. Her beam is 40 ft. Her displacement is 2,862 tons, and she will have a cargo capacity of 1,800 tons, or 1,000,000 ft. of lumber. She is expected to be used in the lumber trade, although she is designed with the view of carrying any kind of a cargo. In appearance she will not perhaps be beautiful, but this is not because the designer did not wish it. It is desired to have as big bodied a vessel as possible, and Mr. Crowninshield has certainly complied with the wishes of the owners. She is very full forward and gains her greatest beam very close to the bow and carries it nearly to the taffrail. Her sections are nearly square. For the size of the hull and its form she will not carry a very large sail plan. Her lower masts are 99 ft. long, and the topmasts are 55 ft. long, with a masthead of 11 ft. Her spanker boom is 67 ft. long, and the spanker gaff is 38 ft. The other booms are 37 ft. and the gaffs 36 ft. She has one general hold for stowing lumber, although there are beams for a third deck if it should be required. There is a poop deck which breaks just forward of the mainmast, and there is good space in the upper 'tween decks for stowing cargo. There are two ports in the bow for loading and unloading lumber. Her keel, stem and sternpost will be of white oak. Her lower timbers will be of hackmatack. She will be planked with yellow pine, and her deck will be of white pine. She will have steam hoists for sails and anchors, and will trim by steam, and in all other respects she will be thoroughly up-to-date.

The Jennie R. Dubois, the first five-masted schooner ever built in Connecticut, was launched last week at Holmes' Ship Yard, West Mystic. The whole town took a holiday to witness the launch, even the schools closing. The schooner is 230 ft. long on the keel, 275 ft. over all, 46 ft. wide and 26 ft. deep. The vessel has three full decks which extend her whole length. There are three deck houses. The forward is 23x23 ft. and contains the engine room and forecastle; the former containing a 30 H.P. hoisting engine for use in raising the sails, anchors, and in loading and discharging cargo, and the latter furnishing comfortable accommodations for eight seamen. The midship house, 14x17, will contain the second officer's quarters, stateroom and cook's galley. The cabin house aft, 33x28, is divided into several rooms and furnished in quartered oak, sycamore and cypress. The after cabin is decorated in ebony and gold richly furnished. The dining room, 11x13, is furnished in aluminum and ebony. The captain's stateroom, 17x19, has everything essential to the master's comfort. The first officer's quarters, three spare staterooms, a bath room and a pantry complete the apartments in the cabin. Back of the cabin is a large wheelhouse, somewhat of a new feature for vessels of this kind. The lower masts come from the great forests of Oregon, and are 109 ft. in length. The topmasts go up for a distance of 56 ft. more. The booms are 40 ft. The ship will carry one patent, stockless 7,250-lb. anchor and one 6,000-lb. stock anchor. Three powerful wrecking pumps, with a capacity of 800 gallons a minute, will also form part of the equipment.

The steamboat William G. Payne, which the Harlan & Hollingsworth Co., Wilmington, Del., is building for the Bridgeport Steamboat Co., Bridgeport, Conn., was launched last Saturday. Her general dimensions are: Length over all, 257 ft.; length on water line, 240 ft.; beam at water line, 36 ft. 10 in.; depth molded amidships at side, 14 ft. 6 in.; draught, 8 ft. She is designed as a day boat, with ten parlors on the saloon deck, and will accommodate about 1,800 passengers. The crew will be very comfortably housed. Below the main deck a large compartment is fitted up for the use of second-class passengers. The saloons will be exceptionally well lighted, the windows being about double in size of those of an ordinary steamboat, making the saloon one large observation room, a feature which will be much appreciated by the traveling public. The builders are sparing no expense, as they intend to make her the finest steamer in New York, and are ably fulfilling their part of the contract. The engine is of the compound inclined cylinder direct-acting type, with cylinders 35 and 72 in., and a stroke of 72 in., with Stephenson link motion. Feathering wheels are used. They are 19 ft. in diameter, with nine buckets 10 ft. 6 in. wide. Four Scotch boilers 10 ft. 6 in. long and 12 ft. in diameter for 140 lbs., will furnish steam. There will be a complete electric lighting plant, with a powerful searchlight. The vessel will be running on its intended route the first week in May, and should surprise the fleet of fast boats that abounds in New York waters.

Capt. Fremont Kimball, formerly of the schooner Annie F. Kimball, has placed a contract with Capt. James W. Hawley of Bath, Me., for a four-masted schooner of the following dimensions: Length, 160 ft.; breadth, 36 ft.; depth, 13 ft.; gross tonnage, 700.

Capt. Frank Benedict of New Haven has ordered of the New England Co., Bath, a three-masted schooner 142 ft. on the keel, 35 ft. beam and 13 ft. depth of hold, to be ready July 1.

The New England Co., Bath, Me., have begun putting on the top frames for the new steamer for the Kennebec and Boston line, to succeed the old Sagadahoc.

Gardiner G. Deering of Bath, Me., is getting out the frame for a large schooner, work upon which will be commenced early in the spring.

Green Bros.' ship yard at Bridegport is finishing the four-master Perry Setzer and building an oyster and a small freight steamer.

The new schooner Wm. Nottingham is being completed at the ship yard of Captain Reed, at Ballard, Wash.

AROUND THE GREAT LAKES.

The steamer Greyhound for the White Star line was launched at the yards of the Detroit Ship Building Co. last Saturday.

Mr. George H. Norton of the bureau of engineering of Buffalo has submitted to the committee on improvement of the inner harbor an estimate of the cost of deepening Buffalo river and the Blackwell canal. His program is comprehensive and calls for an outlay of $328,000.

Com'dr John C. Wilson, lighthouse inspector of the eleventh district, stationed at Detroit, will soon be relieved, his term of duty there having expired. He will be succeeded by Com'dr Edward H. Gheen, who has been on waiting orders since September, and who has been in the naval service since 1862. Com'dr Gheen is a Pennsylvanian.

The Hines Lumber Co. of Chicago has purchased the steamer A. Folsom, which was owned by the Mitchell Transportation Co. of Bay City. The Folsom is 180 ft. keel and 33 ft. beam and her gross tonnage is 940 tons. Lumber shippers are steadily adding to their carrying capacity. While there has been some figuring for tonnage during the week, no season contracts have been reported.

Capt. D. D. Gaillard, government engineer at Duluth, has sent out a notice to the effect that a meeting will be held in the engineer's office at Houghton, Mich., on March 3 to listen to petitions regarding the proposed improvement of the bridge over Portage lake between Houghton and Hancock. The present draw is regarded as an obstruction to navigation and it is the purpose to rebuild it by the opening of navigation, 1903.

Mr. J. C. Gilchrist of Cleveland has purchased the barges Tyrone and Antrim from Drake & Maytham of Buffalo. Both barges were built by the Globe Iron Works Co. of Cleveland. The Antrim came out in 1897. She is 366 ft. keel and 44 ft. beam and her gross tonnage is 3,200 tons. The Tyrone was built in 1895. She is 300 ft. keel and 41 ft. beam. The vessels are at present in winter quarters at Milwaukee. Mr. Gilchrist will take immediate charge of them.

Capt. A. B. Wolvin of Duluth has replied to the letter of the Hon. Robert McKay, president of the board of harbor commissioners, in which it was pointed out that the harbor board was now in a position to consider a proposal from Mr. Wolvin for the Windmill point site for an elevator. Capt. Wolvin replied regretting that he was not in a position to do business with Montreal as negotiations, begun in good faith, were under way at Quebec for the accommodation of the Great Lakes & St. Lawrence River Transportation Co.

The gauge records of the United States lake survey show the following mean stages of water for January, above mean-sea level: Lake Superior, 601.76 ft.; Lakes Huron and Michigan, 579.42 ft.; and Lake Erie, 571.17 ft. These stages show Lake Superior to have been .46 ft. lower than during same month last year, and .18 ft. lower than during January, 1895; Lakes Huron and Michigan were .24 ft. lower than during same months last year, and .10 ft. lower than during January, 1895; Lake Erie was .27 ft. lower than during same month last year, and .15 ft. lower than during January, 1895.

At the annual meeting of the Breitung Iron Co., held in Marquette this week, the following officers were elected: George Wagner, president; John F. Carey, vice-president; E. N. Breitung, secretary and treasurer; George Wagner, John F. Carey, E. N. Breitung, James Wallace and Charles C. Jones. The scene of the company's operations is twenty-five miles northeast of the Canadian Sault, in the territory catered to by the Algoma Central railroad. The railroad people are running a line to the property and virtually have it completed. Only about half a mile of track is still to be laid and this will be accomplished in the spring. The work of developing the property was commenced last June, and the showing is flattering in the extreme. All the ore struck so far has been a good quality of Bessemer. The slate of which the footwall is composed is itself well mineralized, some of it assaying as high as 20 per cent. iron, while in driving the tunnel several stringers of ore, from 6 to 18 in. in width, were struck after the 100-ft. mark had been passed. The ore is practically the same as that mined in the Ishpeming district. The Clergue people have agreed to take every ton for use at the blast furnace at the Sault.

A chart of the Detroit river in colors—the best chart of the river ever printed—has just been issued from the Detroit engineer office. It takes in everything from Windmill point to Bar point. All the changes resulting from extensive dredging, shifting of ranges, etc., are very clearly shown, and the corrections are, of course, up to date. This chart may be had from the Marine Review.

For navigation charts apply to the Marine Review.

SCOTTISH SHIP BUILDING.

BY BENJAMIN TAYLOR.

Glasgow, Feb. 8, 1902.—Not much attention has been paid here to the constantly repeated stories about a combine to include all the transatlantic shipping lines, for the simple reason that such a combination is not practicable—although an agreement as to minimum rates may be. Nor has any credence been placed in reported American designs to acquire a controlling interest in our steel and ship building industries—for that also is not practicable. But an interesting combination has just been effected at our own doors which may have important consequences in the ship building and engineering world. Vickers, Sons & Maxim, Ltd., of Barrow-in-Furness and Sheffield, have acquired one-half the ordinary share capital (that is to say, half of £1,500,000) in William Beardmore & Co. (Ltd.) of Glasgow. In exchange they give the Beardmore company 400,000 shares of £1 each in the Vickers company, which shares at the moment are worth £3 each. Therefore, the purchase price of the Beardmore interest is £1,200,000. Both concerns are manufacturers of steel, of armor plates, of ships and of marine engines. But Beardmore rolls heavier armor plates than Vickers, and Vickers make some material that Beardmore does not. Again Vickers make heavy gun mountings, but not heavy guns, which Beardmore is just beginning to make. Both are on the admiralty list, and both also build extensively for foreign countries. And the government have, it is reported, just decided to adopt the Vickers system of mountings for all 12-in. and 9.2-in. guns; that is to say, the heaviest in the service. Beardmore & Co. are at present operating (as I have mentioned in former letters) the historic ship yard and marine engine works formerly carried on by Robert Napier & Sons. They are now about to leave that yard in favor of one better situated, which they are laying out at Dalmuir, lower down the Clyde and not far from the establishment of John Brown & Co. (Ltd.), Clydebank. At the new yard the Beardmore company will be able to turn out freely warships and merchant ships of the very largest dimensions, with material (including ordnance) manufactured solely by themselves and their allies, the Vickers company. The combination is a strong one, and it will probably be made stronger by absorption of other concerns.

The admiralty contracts have not yet been placed, but it is currently reported here that the orders for both third-class cruisers are practically alloted to the Clyde. The tenders ranged from between £180,000 to £250,000 per ship. The contracts for the big cruisers and battleships may not be placed before the end of February, as the boiler question has complicated the tenders. The admiralty called for each tenderer to submit alternative designs for boilers. The cruisers are to be of 22,000 I.H.P., and the battleships of 19,000 I.H.P. Cylindrical boilers of the old type for these powers would mean an increase of 300 tons increase in weight of machinery in the case of the cruisers, which would have to be taken off the weight of the armor, or from bunker capacity, or from both. It is said that in one battleship where only two-fifths of the boiler power is made up of cylindrical boilers and three-fifths of water-tube boilers, there is an increase in weight of quite 150 tons as compared with a ship in which Babcock & Wilcox boilers are used for the whole steam supply. With the Belleville boilers for the same power, the difference is over 300 tons. The Belleville comes out about 150 tons lighter than the Babcock & Wilcox. Thus one battleship which is to be fitted with a combination of boilers will have machinery weighing 1,880 tons, and two ships to be fitted with the Babcock boilers worked out to 1,730 tons. Part of the increase is attributed to the reduction in the steam pressure, as a 300-lb. pressure would not be prudent in the cylindrical system. Thus, this one battleship will work with steam of only 210 lbs., as compared with 300 lbs. usually adopted in the existing water-tube boilered ships. To get the same power with this steam each of the cylinders requires to be greater in diameter by 5½ to 6 in. The power got per ton of machinery works out to about 9½ I.H.P. with the combination of boilers, which is about the same result as by adopting cylindrical boilers for the whole power, although the advantage with the water tube boiler is that a sudden increase from cruising to full speed can be attained within a few minutes. The engines working from the two different boilers will have cylinders 38 in. in diameter for the high pressure, 60 in. for the intermediate, and 67 in. for the two low pressure, the stroke being 48 in.

In two ships with only water-tube boilers the cylinders will be 33½ in. for the high pressure steam, 54½ in. for the second stage of expansion, and 63 in. for the third stage of expansion, and there will be two condensers for each engine. The weight works out to 10 1-3 I.H.P. per ton of machinery, while in corresponding ships the Belleville boilers and their engines are equal to giving an additional horse power tor every ton of machinery in the ship—i. e., 11.4 I.H.P. per ton. Thus for the same weight the Belleville boilers would give 19,770 I.H.P., as compared with 18,000 H.P. for the Babcock system. In the case of the cruisers the Yarrow boiler comes out better than any of the other systems suggested, so far as weight is concerned, each ton of the whole of the machinery being equal to 12 H.P., whereas the Belleville gave 12½ H.P., and the other three systems, the Dürr, Niclausse and Babcock & Wilcox, vary between 11.6 and 11.9 H.P. per hour. Thus the 22,000 I.H.P. in the existing ships is realized from machinery, weighing in all 1,750 tons, while in the Yarrow arrangement the weight is 1,832 tons, in the Dürr 1,852, in the Babcock & Wilcox 1,857 tons, and in the Niclausse 1,892 tons. The Yarrow boilers to be used will be forced to a greater extent, as 20 H.P., is to be got for each square foot of the grate surface, but at the same time 3 sq. ft. of heating surface is allowed for each horse power to be indicated. In all the alternative designs a greater tube area is given than in the case of the Belleville boiler. In the arrangement the total surface is 50,300 sq. ft., and in the four other systems the variation is between 57,000 and 66,000 sq. ft. All the four boiler systems are to work at lower pressure than the Belleville. While there are thirty-one Belleville boilers for the steam generation for the 22,000 H.P., twenty-two Yarrow boilers are specified, twenty-five Dürr and the same number of Babcock & Wilcox and thirty-four Niclausse. Although the Yarrow boiler has been specified for the six cruisers, prices were also asked for the various alternatives; i. e., the Dürr, Niclausse and Babcock & Wilcox, and either one or other of these boilers may be tried in the ships. The Niclausse system has been ordered for two of the County class cruisers at present being built.

In this connection it may be mentioned that the recent trials of H. M. S. Fantome were conducted under the direction of the water-tube boiler committee, and that this vessel is the first to be fitted with the Niclausse boiler since it was experimentally tried in a torpedo gunboat. On the low-power run the mean result is stated to have been 339 I.H.P., with a coal consumption of 1.695 lbs.; while the sister ship Espiegle, with Babcock & Wilcox boilers, at 337 I.H.P., consumed only 1.53 lbs., and two Belleville boiler ships, Mutine and Rinaldo, at the same power, burnt 1.86 and 1.90 lbs. respectively. On a thirty hours' trial, at 75 per cent of the full power, the Niclausse boiler ship at 1,020 I.H.P. equalled that with the Babcock boilers, the rates being respectively 1.53 lbs. and 1.54 lbs.; while the Belleville ships named returned 1.72 and 1.60 lbs. On the full power trial the Niclausse boiler ship did well also. Her power was 1,453 I.H.P.; speed, 13.63 knots, and coal consumption 1.53 lbs. The Espiegle, with the Babcock & Wilcox boilers is said to have consumed 1.70 lbs., and the two Belleville boiler vessels 1.63 lbs. and 1.61 lbs. respectively.

Another submarine boat has been ordered by the admiralty from Vickers, Sons & Maxim, Barrow, of a different type from the five built by this firm last year. The new boat is to be 37 ft. longer than the others and will have some new features in design and structure.

One of the two Union-Castle liners—the Berwick Castle—built by William Beardmore & Co. for the Union Castle Mail Steamship Co., completed her official trials on the Firth of Clyde a few days ago. These splendid steamers have been specially designed for the company's extra cargo service to South Africa, with a carrying capacity of 7,000 tons on a moderate draught of water and a good sea speed. The general dimensions are: Length, 400 ft.; breadth, 50 ft.; depth molded to main deck, 29 ft. 8 in. There is a complete teak shelter deck right fore and aft, and a cellular double bottom and deep tank for water ballast. The boats are built of steel to Lloyd's highest class under special survey, in accordance with the board of trade regulations for passenger steamers, while the most modern improvements have been introduced for the efficient working of the ship, and the rapid handling of cargo. Accommodation for first-class passengers is in a commodious deck house, amidships, the saloon finished in polished oak, and the large staterooms well furnished. A large number of third-class passengers and emigrants can be carried in the 'tween decks. The refrigerating space is on the lower deck aft, with machinery for maintaining the various chambers at a low temperature, and the vessel is equipped with a very complete installation of electric lighting throughout. The machinery consists of two sets of triple-expansion engines, with cylinders 21½, 35 and 58 in. diameter by 4 ft. stroke, and four single-ended boilers for a working pressure of 200 lbs. per sq. in. The most recent appliances for efficiency and economy, including Howden's forced draft, bronze propeller blades, etc., are fitted.

Another new Anchor liner has just been launched by D. & W. Henderson & Co., Meadowside, Glasgow, of the following dimensions: Length, 400 ft.; breadth, 49 ft.; depth, 30 ft. 9 in., molded; with a gross tonnage of 5,100 tons. She will have a set of triple-expansion engines, with cylinders 26 in., 43 in. and 71 in. diameter by 4 ft. stroke. There will be two double-ended boilers working at a pressure of 180 lbs. This latest addition to the Anchor line fleet is intended for their Indian passenger service, and has been built to the highest class of the British corporation. Accommodation is provided on the bridge deck for a large number of first-class passengers. The main saloon is a handsome apartment situated on the bridge deck. The vessel is fitted with all the latest improvements to insure the rapid working of the large cargo which she has been designed to carry, including ten powerful steam winches. An insulated chamber for storing meat and vegetables has been provided, which will be kept constantly cool by a large refrigerating machine placed in the engine room. The new liner, which was named Olympia, is the sixth vessel launched by Messrs. Henderson for the Anchor line since it became a joint stock company. There are still being built for this company other three vessels, one of which, the Columbia, for the Glasgow and New York service, will be launched in February.

The great problem with the steam turbine has been as to how the coal consumption will work out in active service. For this reason the results of the Clyde-built passenger steamer, King Edward, have been awaited with the keenest interest. They are now known. An official return has been made of the coal consumption of this steamer, which is fitted with Parsons' steam turbine, and comparison is made with the paddle steamer Duchess of Hamilton, doing corresponding work in the previous year. Both hulls were modeled to offer the minimum resistance and both built by William Denny & Bros., though there is some difference in the displacement. Both vessels were equal to the same duty and to earn the same revenue. Taking the whole excursion season, the turbine boat steamed 8.47 miles per ton of coal consumed, as compared with 8.87 miles per ton by the paddle steamer; but she steamed at a higher rate—18½ knots as compared with 16½ knots. The King Edward had the shorter season—seventy-nine days as compared with 111 days run by the Duchess of Hamilton in 1900; and she consumed 18 tons 2 cwt. per day as compared with 15 tons 7 cwt. by the Duchess of Hamilton; but on an average she steamed 153 miles, as compared with the 140 miles of the Duchess of Hamilton. In other words, the full season's work of the latter was 15,604 miles; the part season's work of the King Edward 12,116 miles. The total consumption of coal in the Duchess of Hamilton was 1,758 tons 13 cwt., and in the King Edward 1,429 tons 16 cwt.

The new turbine vessel being built to succeed the King Edward is 20 ft. longer and is to steam 21 knots. Turbine machinery for the 700-ton yacht which Alexander Stephen & Son of Glasgow are building for Sir Christopher Furness is to be of 1,500 H.P. Ramage & Ferguson are building a turbine yacht for Mr. A. L. Barber of New York, which is to be 1,400 tons, 260 ft. 8 in. long between perpendiculars and 253 ft. on the load line, 33 ft. 3 in. beam. Her machinery will develop 3,500 H.P. Another turbine yacht is to be built by Yarrow & Co. for Col. McCalmont, M. P. This vessel is to be of the torpedo boat type and is to steam 24 knots. She will be 152 ft. 6 in. long between perpendiculars, 15 ft. 3 in. molded breadth, and her tonnage will be 170 tons. The Parsons' company have under construction a torpedo boat destroyer of 33 knots, with which

they hope to excel in the matter of coal economy. So the steam turbine is really beginning to have a vogue.

Great interest has been taken here in an ocean race by sailing vessels from San Francisco to Queenstown. It has been decided by the arrival first of the iron ship Glenesslin of Liverpool at Queenstown. Altogether seven vessels entered into the competition, which has been the subject of heavy betting. The Glenesslin, commanded by Capt. Pritchard, is a ship of 1,743 tons, built at Liverpool and owned there. Her competitors were the Foyledale, Celtic Monarch, Mooltan and Dovenly, all of Liverpool; the King Edward (of Glasgow) and the American ship H. B. Babcock. On Sept. 27 and 28 last the competitors took their departure from San Francisco. The weather at first was very favorable and the Foyledale forged ahead, but was rapidly overtaken by the Glenesslin. The latter, however, got into difficulties after rounding Cape Horn, and lay for three hours on her beam ends. No fewer than eleven sails were lost in the gale. The ship afterwards righted, and as the storm moderated she again made good progress, arriving the first late on Jan. 27 in Queenstown harbor. Cablegrams and telegrams were received yesterday by Capt. Pritchard congratulating him on the success of his long race. The Glenesslin has beaten several British ships that sailed from San Francisco one month before she sailed, but the Glasgow ship Sussex has done better still, having made the voyage from Astoria to Queenstown in 119 days.

At the last meeting of the Institution of Engineers and Ship Builders in Scotland, the subject of gas and other internal combustion engines was fully discussed. The subject was opened by Mr. Dugald Clark, who traced the history of the gas engine, and a brief digest of his paper may be of interest to many of your readers. It occurred, he said, very early to quite a number of inventors that, if a mixture of gas and air were compressed before explosion then higher pressures would be obtained, less heat would be lost to the sides of the cylinder, and greater economies would be found. This compression idea occurred to one English inventor as far back as 1838; but it remained for a distinguished Frenchman, Monsieur Beau de Rochas, to propose with perfect clearness a practicable cycle of operations enabling the compression idea to be carried out. This he did in a pamphlet published in Paris in 1862. To the late Dr. Nicolaus August Otto, however, belong the merit of producing the first successful compression gas engine. The commercial history of the gas engine, indeed, might be said to date from the year 1876, when Dr. Otto patented the form of gas engine now so well known as the Otto engine. Nearly all the gas engines at present on the market follow what is known as the Otto cycle. At first the engines built were of small size. In 1878 a 6 H.P. Otto gas engine was considered quite a large one; but gradually as the difficulties of construction were overcome, the power slowly increased, until now the largest single-cylinder gas engine in the world develops 1,000 H.P. when operated by town's gas, and 600 H.P. when operated by blast furnace gas. Oil engines resemble gas engines in that the power is generated by the explosion of a compressed inflammable mixture in an engine operating according to the Otto cycle. In the earlier forms of oil engines, and in those used in motor cars, very light inflammable oils of the gasoline or petrol kind were consumed. Of oil engines of this kind the most important is the petrol motor, so largely used on motor vehicles. The oil engine, however, is still in the development stage. One great source of power which is now being developed on the continent and in this country is the power obtained by the use of blast furnace gas, and by the use of gas producers such as Mond's and Dowson's. The largest engines which had yet been made were those which utilized blast furnace gas. It had been calculated that if all the gas from the blast furnaces of the Uniter States of America could be utilized in gas engines about 2,000,000 H.P. could be continuously produced. On the continent of Europe quite a number of large gas engines are now operated by blast furnace gas. Great future developments must be expected both in gas and oil engines. So far as economy of heat is concerned both have considerably surpassed the best steam engines; but much remains to be done before they equal the steam engine in frequency of impulses, lightness of machinery and absolute steadiness of governing, and in power of control, where reversal is required. As yet the application of gas and oil to any but fixed engines has been very limited; but ultimately no doubt gas and oil engines will be used with great advantage for propelling ships and for driving locomotives. In Mr. Clark's view the gas engine affords to the engineer and inventor an enormous field of work, likely to result in a very considerable revolution, certainly in land engine work, as well as marine work. A gas engine with an efficient gas producer should easily give 1 I.H.P. on ½ lb. of coal per hour, as against 1¼ to 1½ lb. of the best steam engine now in use; that is, power for marine propulsion could be obtained at less than half the present cost. Many engineers are now at work on this subject, and when the problem is further solved it will aid much in meeting the fuel difficulty. The nineteenth century was the century of the steam engine, and the twentieth century will be the century of the gas engine. Steam will ultimately be displaced almost entirely by gas engines.

EXPORT TRADE OF 1901.

The United States maintained its position as the leading exporting nation in the calendar year 1901. The figures of the treasury bureau of statistics, just published, show the exports of each of the principal countries of the world at the latest available date, and clearly indicate that the exports of the United States were during the year larger than those of any other nation. While the total for the full calendar year is only shown in the case of a few of the more important nations, the monthly average for the portion of the year for which figures are available is shown in the case of practically every country. This statement shows that the average monthly exportations in the year 1901 were: United States, $119,840,333; United Kingdom, $113,753,987; Germany, $90,242,000; France, $66,929,329; Netherlands, $56,790,923; Austria Hungary, $32,012,746, and Belgium, $28,678,729. For the full calendar year figures of the United States and United Kingdom are available. They show: United States, $1,438,083,000; United Kingdom, $1,365,047,843. The exports of the United States thus exceed by nearly $75,000,000 those of the United Kingdom. Upon the face the exports of the United States seem to show a reduction of about $12,000,000, but this is due to the fact that the shipments to the Hawaiian islands and Porto Rico were in 1901 no longer classed as exports to foreign countries, and for that reason the export figures on their face show a slight reduction, while in fact if the figures of shipments to the islands were included they would show an increase. The figures of the United Kingdom are, for 1901, $1,365,047,843, and for 1900, $1,417,085,849, a decrease of about $52,000,000. Germany for the nine months ending with September, the latest available figures, shows an increase of $4,000,000 in exports; in the eleven months ending with November France shows an increase of $18,000,000, Belgium a decrease of $7,000,000 and Austria Hungary a decrease of $9,000,000.

On the import side the United States stands fourth in the list of nations, the imports for the calendar year averaging $73,368,421 per month, against $211,789,669 for the United Kingdom, $111,646,000 for Germany, $75,483,423 for France, $65 922,642 for Netherlands, $34,942,018 for Belgium and $28,600,569 for Austria Hungary. It is proper to add that the Netherlands figures are for the year 1900, no statements of the commerce in 1901 being yet available.

The following table shows the average monthly importations and exportations of the principal countries of the world during such portion of the calendar year 1901 as is available, the Netherlands figures, as above indicated, being for the year 1900:

Countries.	Average monthly Imports.	Exports.
United States	$73,368,421	$119,840,333
United Kingdom	211,789,669	113,753,987
Germany	111,646,000	90,242,000
France	75,483,423	66,929,329
*Netherlands	65,922,642	56,790,923
Austria-Hungary	28,600,569	32,012,746
Russia, European	22,838,052	30,227,582
India, British	21,803,746	30,891,359
Belgium	34,942,018	28,678,729
Italy	29,700,743	22,657,465
Canada	16,097,469	18,959,203
Brazil	5,258,454	15,051,841
Argentina	9,449,168	14,061,897
Switzerland	17,071,874	13,127,468
Spain	13,464,488	10,698,054
Japan	10,803,457	10,176,972
*China	13,446,163	9,553,055

*1900.

MONTHLY SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of naval construction shows that fair progress is being made upon all of the warships. The Cramps are making the greatest headway upon the new contracts for armored cruisers, the Pennsylvania being 15 per cent completed and the Colorado 18 per cent. Following is the summary:

Name.	Building at	Degree of completion, Per cent. Jan. 1.	Feb. 1.
BATTLESHIPS.			
Maine	Wm. Cramp & Sons	78	82
Missouri	Newport News Co.	54	56
Ohio	Union Iron Works	43	43
Virginia	Newport News Co.	0	0
Nebraska	oran Bros. Co.	0	0
Georgia	Bath Iron Works	6	7
New Jersey	Fore River S. & E. Co.	5	7
Rhode Island	Fore River S. & E. Co.	5	7
ARMORED CRUISERS.			
Pennsylvania	Wm. Cramp & Sons	13	15
West Virginia	Newport News Co.	6	8
California	Union Iron Works	0	0
Colorado	Wm. Cramp & Sons	15	18
Maryland	Newport News Co.	6	7
South Dakota	Union Iron Works	0	1
SHEATHED PROTECTED CRUISERS.			
Denver	Neafie & Levy	66	69
Des Moines	Fore River S. & E. Co.	62	63
Chattanooga	Lewis Nixon	53	53
Galveston	Wm. R. Trigg Co.	49	51
Tacoma	Union Iron Works	20	20
Cleveland	Bath Iron Works	72	74
St. Louis	Neafie & Levy	2	2
Milwaukee	Union Iron Works	0	0
Charleston	Newport News Co.	0	0
MONITORS.			
Arkansas	Newport News Co.	85	89
Nevada	Bath Iron Works	92	92
Florida	Lewis Nixon	79	86
Wyoming	Union Iron Works	75	75
TORPEDO BOAT DESTROYERS.			
Bainbridge	Neafie & Levy	99	99
Barry	Neafie & Levy	96	97
Chauncey	Neafie & Levy	98	98
Dale	Wm. R. Trigg Co.	98	98
Decatur	Wm. R. Trigg Co.	98	98
Hopkins	Harlan & Hollingsworth	79	80
Hull	Harlan & Hollingsworth	77	78
Lawrence	Fore River S. & E. Co.	99	99
MacDonough	Fore River S. & E. Co.	98	98
Paul Jones	Union Iron Works	85	85
Perry	Union Iron Works	89	89
Preble	Union Iron Works	87	87
Stewart	Gas Engine & Power Co.	64	64
Truxton	Maryland Steel Co.	81	83
Whipple	Maryland Steel Co.	80	80
Worden	Maryland Steel Co.	79	80
TORPEDO BOATS.			
Stringham	Harlan & Hollingsworth	98	98
Goldsborough	Wolff & Zwicker	97	93
Blakely	Geo. Lawley & Son	98	98
DeLong	Geo. Lawley & Son	98	98
Nicholson	Lewis Nixon	97	97
O'Brien	Lewis Nixon	98	98
Thornton	Wm. R. Trigg Co.	97	97
Tingey	Columbian Iron Works	74	74
Wilkes	Gas Engine & Power Co.	94	94
SUBMARINE TORPEDO BOATS.			
Plunger	Lewis Nixon	56	75
Adder	Lewis Nixon	96	97
Grampus	Union Iron Works	51	60
Moccasin	Lewis Nixon	92	94
Pike	Union Iron Works	50	55
Porpoise	Lewis Nixon	88	89
Shark	Lewis Nixon	84	86

THE SOURCES, GROWTH AND DEVELOPMENT OF THE LAW MARITIME.

MR. GEORGE S. POTTER IN THE YALE LAW JOURNAL.

An acquaintance with the history of any branch of the law is always valuable to the lawyer. To the admiralty lawyer a knowledge of the sources of the law maritime is of the utmost importance. Its present condition being the outgrowth of more than three thousand years of commercial intercourse among the nations engaged in the navigation of the seas, it is essential to a proper appreciation and understanding of its nature, scope and character at the present day that those who practice it should familiarize themselves with its history and be able to recall the various steps of its growth and progress. It has been, and is, a just cause of complaint that of late years there has existed a perplexing conflict of decision among our admiralty courts upon several important questions. The criticism has been made that this conflict is in a measure to be attributed to the lack of familiarity on the part of some of our judges with the underlying principles of the law, which a knowledge of its older codes, rules and ordinances would have afforded. It is probably true that many of the unfortunate expressions to be found in our law reports would never have been employed if the persons (reporters, counsel and judges) who used them had been better acquainted with the law literature of the past.

But we have only to call to mind the examples of Lord Mansfield and Judge Story to illustrate the advantages which an admiralty lawyer who has explored the sources of the law possesses. The evident delight, not unmixed with reverence, with which those great expounders of the Lex Mercatoria and Law Maritime would, on occasion, turn to the fountains of the law is instructive and inspiring. In delivering judgment, with what satisfaction no doubt would Lord Mansfield, as in Luke vs. Lyde, 2 Burrows, 822, proceed to say: "I find by the ancientest laws in the world—the Rhodian laws, that the master shall have," etc. How much clearer was his insight into the case that was presented to him who could thus turn to a rule that had probably received the sanction of 3,000 years of usage.

Indeed it is not going too far to say that to all lawyers the study of the admiralty law is not only profitable but necessary; for nothing is more certain than that its influence is felt in almost every department of the law. And it comes to us venerable with age, ennobled with an ancestry which no other branch of the law can be said to have possessed.

Let this then be my excuse for inviting the readers of the Journal to accompany me for a few moments in an examination of some of the circumstances which led to the creation of the law maritime, and of the leading events in its rise and development. I shall omit whereever it seems advisable reference to the authorities consulted and employed.

To the Phoenicians, who were called Canaanites by the sacred writers, who inhabited the coast of the Mediterranean from the Island of Aerad to Mount Carmel, to which country they had been driven by the Hebrews, and whose chief city was Tyre, has been ascribed the distinction of being the inventors of a marine and the originators of maritime commerce. Their voyages were extended step by step from Sicily to Sardinia, Greece, Gaul, and Spain; then boldly venturing beyond the Mediterranean and out upon the waters of the Atlantic their courage was rewarded by the discovery of Great Britain. For at least 1,600 years before the birth of Christ, Phoenicia had undisputed dominion over the sea and was the mistress and possessor of its commerce. Under the protection and with the assistance of the King of Egypt in the year 611 B. C., Phoenician sailors set out upon the perilous undertaking of the circumnavigation of Africa; they were successful. But the power of Phoenicia was waning; she was losing her colonies one by one; and then the final catastrophe came. Nebuchadnezzar, King of Babylon, appeared before the walls of Tyre, and for thirteen years his armies thundered at her gates. Destroyed to her foundations; rebuilt under Cyrus; splendid under the reign of the Persian kings; again destroyed by Alexander the Great, re-established by his successors; passing successively under the empire of the Romans and of the Saracens; alternately prosperous and depressed, this first of the great commercial cities has passed away; and the prophecy of Ezekiel has been fulfilled: "They shall destroy the walls of Tyrus and break down her towers; I will also scrape her dust from her and make her like the top of a rock." But the Phoenicians had founded Carthage, and Carthage on the destruction of Tyre became the greatest power in the Mediterranean. Then came the Punic wars, and this the then greatest commercial state measured its strength with no unequal success with the greatest military power; but finally in the year 146 B. C., Rome was victorious, and Carthage, a city of more than 20 miles in circumference and containing nearly 1,000,000 inhabitants, was totally destroyed.

Following Phoenicia the other great historic powers which claimed the empire of the sea were Rhodes, Persia, Greece, Macedonia, Carthage and Rome. And, then in their order, Pisa, Venice and Genoa. Pisa, on the suppression of the Roman empire, had erected itself into a republic and soon became a formidable maritime power, and, maintaining numerous fleets, she with her powerful navy long enjoyed the distinction of being the mistress of the sea. But the repeated invasions of Italy by the Goths and Huns gave rise to a seat of trade on the waters of the Adriatic, and, from the islands of the sea there arose the marble walls of Venice, its famous exchange the Rialto, being the witness of transactions which reached farther and were of greater magnitude than the world had ever seen before. There it was that the first public bank of modern times was organized; that bills of exchange were first negotiated and funded debt became transferable; and finance became a science, and bookkeeping an art. And then came Genoa, following in the footsteps of Venice, her imitator, her rival and, finally, her enemy.

If it were advisable to refer more fully to the causes and the magnitude of the operations which created, nurtured and established the principles of the law maritime we should need to go no further than merely to mention the names of Portugal, Spain, Holland, France, England and the nations of northern Europe.

Were there any rules or laws of the sea by which the transactions of the merchants and mariners of ancient and mediæval Europe were governed, their rights protected and their obligations enforced; and, if there were, have they any connection with or bearing upon the laws of our modern commercial states? Assuming such a question to have been asked, let us attempt to answer it.

To Rhodes belongs the honor of promulgating the first authoritative code of maritime laws. Admirably situated, with excellent harbors and with a people having a natural genius for trade and love for the sea, Rhodes established a maritime empire more beneficent and more real than that of Phoenicia, and disdaining the conquests of war, became the protector of the nations she might have enslaved—conferring benefits instead of creating discord, she presented to the world, among the choicest of its gifts, a noble system of laws, which for a period commencing 900 years before the birth of Our Savior, and as yet without end, has compelled the admiration of jurists of every succeeding age and embellished the statute books of some of the most civilized and powerful of nations. They were the source of the maritime jurisprudence of Rome, and while they in their ancient form have probably not been handed down to us, with the exception perhaps of the fragment upon the law of Jettison which was incorporated into and became a part of the Roman civil law, we find that there are many other rubrics of the civil law which relate to shipping that are not traceable to any earlier origin.

The law of general average had its inception in the fragment upon the subject of jettison—De Jactu. Fourteen centuries after its promulgation in Rhodes, it was incorporated into the digest of Justinian, and for nearly 3,000 years it has been a recognized law of commercial nations. It reads as follows: "It is provided by the Rhodian law that if goods are thrown overboard in order to lighten a ship, the loss incurred for the sake of all shall be borne by the contribution of all." Here we have the substance of the whole doctrine of general average contribution as practiced among commercial men and adjusters of marine losses in every nation doing business upon the great maritime highways of the world. I venture to say that scarcely a week passes in the city of New York, or on the shores of the great lakes, in which this rule is not in some manner applied and enforced.

It is not known whether the Phoenicians, the Carthaginians or other ancient nations, their contemporaries, possessed or published any maritime laws or regulations. But we do find that when Rhodes, anxious and alarmed at the growing power of the insatiable Roman republic, broke away from her connection with Macedonia and united her fortunes to those of the great republic, the Romans became acquainted with that comprehensive system of naval jurisprudence (the Rhodian laws) which they afterwards adopted. Rome had already become powerful upon the sea, and as a consequence had commenced the enactment of marine regulations—that is to say, an edict for the protection of the goods of persons traveling by sea had been issued. It is, however, in the ninth title of the fourth book of the Pandects that mention is made for the first time in the Roman law of ships and mariners. If space permitted, it would be profitable for us to inquire into, and examine, the system of maritime laws embodied in the Roman digest. Indeed, we might go further than this with increasing interest and advantage, for the whole body of the civil law is full of instructive interest to the student, in view of the influence which it exercises upon the law merchant of the present day as administered by the courts of admiralty, as well in great measure by our courts of common law. And fortified by excellent authority, we might even venture the assertion that, in many instances where its regulations differ from those of the common law, the superiority of the civil law is readily perceived and appreciated.

Hence, we find that courts of admiralty in the broad exercise of their equitable powers, for they are peculiarly courts of equity, are largely governed by the rules of the civil law.

But there are other well cultivated fields to which those courts resort. We find them seeking rules for their guidance in the famous collection known as the Consolato Del Mare—the consulate of the sea—a voluminous compilation of laws relating to commerce and navigation, the origin of which is involved in some obscurity. It has been called "a collection of maritime and positive laws and of the particular ordinances of the middle and dark ages." (Hubner). Azuni, a native of Sardina and a very accomplished writer, in his work on maritime law, published in its different editions in the latter part of the eighteenth and early part of the nineteenth century, asserts that it appears to him that the Consolato can be the production of no other than the Pisans. And he supports his assertion with an interesting array of historical information and deductions. The Pisans certainly created a most complete and elaborate code of maritime laws, in many respects embodying and resembling the principles of those of the Rhodians and Romans; but if we are to be content with the statements of a learned writer upon the subject of the Consolato in the Encyclopædia Britannica, the credit of its compilation and its embodiment in book form is due to Spain, and particularly to the city of Barcelona, where, late in the fifteenth century, it was printed and appeared. Indeed the writer seems to concede the work to be purely of Spanish origin, both in conception and design. Facts are stated by him which can hardly be reconciled with the statement of Azuni, that the Consolato can be the production of no other than the Pisans. On the other hand, Azuni assures us that the Consolato was certainly compiled and universally known in the year 1075 (four centuries prior to the Barcelona edition); that at that period the Barcelonians who have been credited with its authorship, assisted by the Pisans, had scarcely begun to shake off the yoke of the Saracens, and that they were shut off from the sea by the continual piracies and incursions of the Saracens. It is probable, however, that the Consolato was a gradual collection of the rules and usages among commercial nations from the twelfth to the fourteenth century. We find it frequently referred to in connection with the subject of the ownership of ships, with the rights and duties of master and seamen, the law of affreightment, of equipment and supply, jettison, salvage, average, ransom and prize. Prof. Parsons advises us that the best edition of the Consolato is that of Pardessus in his collection of maritime laws.

The citizens of Amalfi, a city founded in ancient Lucania by a colony of families fleeing from the tyranny of Rome at the close of the ninth century, it is said, created a system of maritime laws that even eclipsed the laws of Rhodes. They were called the Amalfian table; but as no vestige of them has come down to us the fact of their existence possesses scarcely more than a mere historic interest.

We come now to the laws of Oleron, so often quoted and cited in the opinions of judges and by text writers, and which are today to be found

in every well furnished law library. They were published on the island of Oleron, an island situated two leagues distant from the coast of France, near Rochelle. Perhaps the best and most authentic account of their creation is that which ascribed them to Queen Eleanor, then Duchess of Guienne. Eleanor, having observed the high reputation which the Consolato had acquired throughout the Levant, on her return from the Holy Land immediately caused a compilation to be made of the maritime sentences and judgments of the west, under the title of "Role d'Oleron." These laws were published about the year 1150, and relate to the navigation and sale of a ship, the duties of the master and mariners, wreck, freight, salvage, jettison, injuries to cargo, quarrels on board ship, collisions, supplies, stranding, etc., but do not mention the important subject of marine insurance.

Another celebrated body of laws to which reference is often made by the courts and by counsel are those which were compiled by the merchants and burgesses of Wisbuy. Wisbuy was an important city situated upon the island of Gottland in the Baltic sea, belonging to Sweden, and was in its day the most flourishing mart and fair in Europe.

In the introduction to the laws of Wisbuy in 1 Peter's admiralty decisions, we find this interesting sketch of that once opulent city:

"In the northwest part of the island, Wisbuy was situated, a fair and noble seaport; it was built by foreigners, whose first settlement in the country was opposed by the Gottlanders, but who successfully resisted them, and in the year 1288 obtained an important victory over them, after which the citizens, to defend themselves against their enemies, obtained a permission from Magnus, king of Sweden, to wall their city and erect bastions and other fortifications. They flourished more and more and grew great by their trade and navigation, to which they entirely gave themselves up; there being no city so full of merchants and so famous for its commerce. Hither came Swedes, Russians, Danes, Prussians, Livonians, Germans, Finlanders, Vandals, Flemings, Saxons, English, Scots and Frenchmen to trade. Each nation had its quarter and particular streets for its shops or warehouses. All strangers were safe and welcome there, and enjoyed the same privileges as the townsmen themselves. The magistrates of the city had the jurisdiction or rather the arbitrament of all causes or suits relating to sea affairs. Their ordinances were submitted to in all such cases, and passed for just on all the coasts of Europe, from Muscovy to the Mediterranean. In the course of time this town was entirely destroyed, except the citadel, which stands to this day. The Gothic historians do not tell us when or how its destruction came upon it, only that it was through civil dissensions which arose from trifles, but occasioned great factions, which set them so against one another that it ended in the entire ruin of them all, city and citizens. The ruins of it are now to be seen and under them are often found tables of marble, porphyry and jasper, evidences of the ancient splendor and magnificence of the citizens. The houses are covered with copper, the windows gilt with gold, and all that is said or that is discovered of it shows the inestimable riches of the former inhabitants. The citizens who survived the ruin of the city retired to the country of the Vandals and Eastern Saxons, who were enriched with their wealth. Albert, king of Sweden, rebuilt the city and granted great privileges to all that should come and inhabit it; but it never could recover its trade and former magnificence."

The laws of Wisbuy appeared some time in the twelfth century, and were largely founded upon the laws of Oleron and the commercial usages of Lubeck and Amsterdam. They were adopted by all the nations of the north, and furnished what must have been regarded as a very complete and satisfactory guide to them in their commercial relations and transactions. They are particularly interesting, from the fact that they contained what is believed to be the first allusion to the law of marine and life insurance.

Passing over the naval laws of the ancient city of Marseilles with the single remark: that published in the thirteenth century they contain many chapters on navigation and maritime contracts, we come next in order of time to the important naval ordinances of the Hanseatic towns. The confederation of Hanseatic cities originated at Bremen in 1164; it included sixty-two European cities, without reckoning other towns which afterwards joined the league. This league was purely a commercial partnership by which those cities which were members of it divided the profits of the trade carried on by the association. This co-partnership, the history of which is full of interest, survived until the year 1669, when the last general assembly was held. Henceforth the name "Hanse-town" was kept by Lubeck, Hamburg and Bremen, but it was to designate their independence, not their union. The marine ordinances of this league were published for the first time at Lubeck in 1591. They were corrected and enlarged in 1614, and as thus completed consisted of fifteen chapters subdivided into a great number of articles.

For a long period the kingdom of France possessed no maritime laws, except those contained in the compilation known as "Le Guidon." Le Guidon probably originated in the year 1400; it relates mainly to bottomry and insurance and is frequently cited.

We might appropriately close our historical notice with an examination of the celebrated marine ordinance of Louis XIV. This code of laws has been called a "most masterly act of legislation * * * the common law of all the neighboring nations." Mr. Abbott observes that "in matter, method and style it is one of the most finished acts of legislation that ever was promulgated." Lord Mansfield acknowledged that he had derived much of his knowledge of maritime law from it and from the elaborate commentary of Valin upon it. The ordinance was published in 1681. The names of its authors are unknown. But, whoever its authors were, they certainly displayed in its preparation the most consummate learning and ability. It covers, says Prof. Parsons, "the whole ground of maritime law * * * enacting with clearness and perspicuity all the provisions then in force, whether derived from * * * general tradition, from previous enactments, or from usage."

We have now glanced at the principle sources of the admiralty law as administered by the courts of this country and England. Neither possesses a complete system of statutory regulations upon this branch of jurisprudence, and yet as has been aptly remarked by Mr. Flanders, "the maritime jurisprudence of England is grounded on the law merchant, which is a branch of the law of nations and forms a part of the English common law; and upon the rules and usages which prevail among commercial men of all countries. Her courts of admiralty, like those of the United States, proceed according to the civil law, the laws of Oleron and other generally received collections of maritime law; the customs of admiralty and particular statutes."

"It is not enough," said the supreme court in the case of the Lottawanna, 21 Wall. 558, "to read the French, German, Italian and other foreign works on the subject, or the codes which they have framed, but we must have regard to our own legal history, constitution, legislation, usages and adjudications as well. The decisions of the supreme court * * * are especially to be considered." Therefore, while as a general proposition, it is true that in the codes and compilations above mentioned are to be found the substructure of the existing maritime law of the commercial world, this statement if left by itself might be somewhat misleading so far as it relates to England and America.

For those compilations possess no binding or arbitrary force upon our courts; they are in some instances modified or disregarded by the courts of both countries, or as the supreme court also said in the case of the Lottawanna "the maritime law is operative in any country only so far as it is adopted by the laws and usages of that country." Neither is it true that England and the United States possess no statutory or authoritative regulations upon this branch of jurisprudence. On the contrary, Magna Charta itself contained a provision for the security of foreign merchants trading in England. While in this country we have, first, the constitutional provision which gives to our federal courts jurisdiction of all admiralty and maritime causes; second, numerous acts of congress for the regulation of commerce and shipping, notably the laws for the registry and inspection of vessels, their clearance from and entry at the ports of the United States; relating to the transportation of passengers and merchandise; for the suppression of piracy; a very complete merchant seaman act for the protection of sailors; a body of prize laws; rules of navigation designed to prevent collisions, etc. Third, the decisions of the courts, which in their local application and because of the peculiar and varying conditions of our commerce have in numerous instances departed from the rules established by the law makers of the old world.

Thus far, our inquiries have been confined for the most part to laws of a statutory or arbitrary character. What shall be said of the array of elementary treatises and commentaries that have resulted from the labors that are the product of the genius and learning of the distinguished body of text writers who have sought, and with great success, to enrich, amplify and expound this branch of the law. For nearly 250 years the local literature of Europe has been immeasurably illumined as from time to time their works have appeared. No other branch of the law has been discussed and commented upon with greater fullness and ability. I think that I should understate the number if I were to say that there were fifty of these treatises. The titles of some of these works and a brief description of their character are given by Prof. Parsons, beginning at page 12 of vol. 1 of his work on shipping and admiralty. But the list there given is far from complete.

The interested student of the law could not better employ some of his leisure time than in glancing at the list and description of the works upon admiralty law set forth in the opening chapter of Jacobsen's sea laws, itself a work of the greatest merit and erudition.

Placed at the head of the catalogue of English writers we find the name of Molloy, his work, De Jure Maritimo et Navali, is often quoted and is much admired.

To the American lawyer, the decisions of the supreme court of the United States are the final authority upon questions of admiralty law arising in causes prosecuted in our national courts. When that court decides a proposition, the question which it involves is settled. It will not avail that the courts of England, the text writers, the codes of continental Europe or the decisions of our inferior courts, appear to differ from it—the investigation is ended. The law is declared when that court has rendered its decision. The pages of the reports of the supreme court are rich in adjudications upon this important branch of the law, and they furnish those who pursue it the finishing, and at the same time a most instructive, chapter in the history of the growth and development of the admiralty law.

SHORTAGE OF SOFT COAL IN DULUTH.

A Duluth despatch says that all of the commercial bituminous coal at the head of the lakes is exhausted and that which remains on the docks belongs to the railroads. The coal managers have been telling of the shortage of soft coal, but many consumers thought the conditions were exaggerated. At least they thought that the shortage would not be acute before March 1 or 15. But the end of the supplies of soft commercial coal has arrived and the railroads, always forehanded in providing for their own wants, control all that now remains.

The price of soft coal in Duluth and Duluth territory has gone to an all rail basis. This means an advance from $3.75 to $4.50. Large quantities of soft coal are on the way all rail to the head of the lakes and to head of the lake territory. Prices of late had been very uneven owing to the rapidly lessening stock, but the average price among those who had any for sale is said to have been about $3.75. Several of the Duluth companies have not had any commercial soft coal for several weeks and one of them has not taken a new order for two months. Good times and favorable weather conditions have carried the coal producers off their feet for a year or two. They have worked every car, leased locomotives and crowded the production to the limit of the facilities for moving the product, but they have not caught up with the demand. The present situation, and indeed for the past two years, is in marked contrast with many preceding years, when the times were poor and the demand light, and there was an excess of coal of all kinds.

The New Orleans Ship Building & Docking Co. has been incorporated in Louisiana by W. Waller Young, J. S. Waterman and others, with a capital of $5,000,000, to acquire, construct, equip, own and operate dry docks, ship yards, construction and repair shops for the manufacture and repair of boats and vessels of all sorts, whether of wood or metal, and machinery of all sorts. The charter also authorizes the company to build and maintain railroads for the transportation of freight or passenger, ferries, transfer boats, wharves and docks and to collect tolls for the use of the same; to construct, own and operate coaling stations, pipe lines and oil tanks, and to buy and sell coal and oil; build or acquire steamships, sailing vessels and other water craft for the transportation of freight or passengers.

A SATIRE ON AMERICAN AGGRESSION.

Fairplay of London, that most excellent shipping periodical, is usually a sober minded journal and not given to levity. In its latest issue, however, it publishes the sale of a mythical shipping company, known as the Runhard Shipping Co., to an American syndicate. The article is interesting for the vein of truth that runs through it. When the Leyland line was purchased by Mr. J. Pierpont Morgan the Britishers were aghast at the price paid for it. The article follows:

A very largely attended meeting of the Runhard Steamship Co. was held at the law association rooms yesterday. The chairman, on rising, said: Ladies and gentlemen, I little thought when we held our annual meeting a few months ago that it would be necessary so soon to call you together again, but in these days events move rapidly, and the circular which you have all received, and which asks you to confirm the provisional sale of your property by the directors, has explained to you the very exceptional circumstances which have made a general meeting necessary. As many of our shareholders are ladies, and some others may not be intimately conversant with the recent trend of shipping matters, I shall take the liberty of going a little into detail as to the position in which we find ourselves. The country at large has for many months been agitated from time to time by the purchase by American capitalists and syndicates of various British industrial concerns, and especially of steamship fleets, or a controlling interest in them, at tempting prices, and the motive for such generous purchases was by no means clear to us. We ourselves have had repeated overtures for the purchase of your property, but of course, until the moment was ripe for action, I was compelled to contradict as unfounded those premature reports which have from time to time appeared in the public press. After a period of most anxious and careful negotiation and consideration, however, your directors have felt that their duty to your interests compelled them a few days ago to sign a provisional agreement to sell the business of the Runhard company to a large and sound financial syndicate in New York on terms which we believe will be found very advantageous to you as shareholders. I need hardly say that to us, the directors, one and all, it was a painful hour when we had to come to the conclusion that this world-renowned British company must pass to the American flag. But the conditions under which commerce is fostered in America differ entirely from those of our own country, and the close sympathy and cooperation which appear to exist there between the leading spirits of commercial activity and the parties responsible for legislative action have brought about a rapid movement, having for its object the sudden transfer, as far as possible, of the mercantile fleets of England to the flag of the stars and stripes. The sudden and unexpected introduction of the mercantile shipping bill two months ago, and its immediate adoption by the United States congress, took us all by surprise. That measure, I may explain, for the benefit of those who have not followed the course of events closely, provides for the admission, without restriction, under the American flag, up to the first day of October, in the present year, of foreign-built iron and steel steamers and ships actually in existence or in course of construction; but furthermore, and far more important, is the provision that from the same date, Oct. 1, imports into the United States arriving in American vessels will be admitted at half the existing tariff duties; this being held to be an important concession in the direction of free trade.

The measure also provides for a tax of $5 per head on passengers landing in America, except from American vessels, and a further clause permits the immediate naturalization to American citizenship of masters, officers, and engineers holding British certificates up to Oct. 1. These are, in brief, the main features of the bill, and I need hardly say that, while we were quite prepared to go ahead against any reasonable subsidization which might have been granted to American competing lines, this new aspect of affairs necessitates the gravest consideration. It will be at once apparent to you that shippers would be compelled to make use of American vessels for their shipments from this country, while the passenger tax would absorb the whole profit of that, the most important branch of our business. The limitation of time above referred to, which was granted in protection to the American ship building industry, compelled very prompt action, and the proposal of the American buyers with whom we have signed an agreement of sale, subject to your confirmation, at once had our most earnest attention.

I must point out to you, further, that the financial syndicate who propose to acquire your property already have a controlling interest in several of the great American railroads carrying grain, provisions, cattle, and other produce, upon which we depend for our homeward cargoes, and if, therefore, we remained outside the sphere of their operations, we should find ourselves entirely at their mercy as regards homeward cargoes. Their proposal, briefly, is to take over the whole business at par, paying out such shareholders as may desire it, and issuing scrip of their corporation to such as may prefer to retain their interests. This gives you the opportunity of realizing your holdings at a far higher figure than any one could have anticipated six months ago. The shareholders, therefore, except from a sentimental point of view, have every reason to be well pleased with the turn which events have taken. It is none of our business to consider what our neighbors are doing, but it is now common knowledge that many, if not most, of our large ocean lines, such as those trading to Canada, West Indies, South America, and even some of our eastern lines which occasionally send vessels to America, as well as a large proportion of our sailing-ship owners, are allowing their vessels to be placed under the American flag, so as to be free to take cargo to United States ports, if at any time they may desire to do so, seeing that they are not thereby placed under the slightest disadvantage in their present trades, and, in fact, they will thus avoid the payment of income-tax in England and the necessity of conforming to many of the regulations of our board of trade. In brief, the measure is a bold and apparently successful attempt to transfer British shipping bodily to the American flag.

I need hardly allude to the futile proposals which were made in parliament to avert this; the proposal to charge tonnage taxation upon foreign subsidized vessels bringing cargoes to England, based upon the amount of subsidy accruing to the round voyage, and the proposal to impose import duties on produce arriving in American vessels were promptly negatived, as being contrary to the principles of free trade, though there is little doubt that such prompt measures of retaliation would have been effective; and there is now no time to be lost if we are to take advantage of the opportunity before us, and not be left to fight against such hopeless odds. Of course, the general management of the business, amalgamated as it will be with other lines, will lie in New York, but I am glad to tell you that our Liverpool office and several of our staff are taken over and become the English agency, so that our managers and many of our clerks will not suffer. I understand, also, that the majority of our captains, engineers, and officers are accepting the offer of Americanization, and will thus be eligible to retain the positions they now hold, so that no one will be a loser by the transfer. Our engineering and repair shops will have to be closed, but we can, doubtless, find buyers for them. I do not think I need say more, and I now formally move the resolution which confirms the sale.

This having been seconded, Mr. Brown (Liverpool) said: Though I am but a very small shareholder, I feel that I cannot refrain from expressing my opinion that the action of the directors is unpatriotic in the extreme, and deserving of our strongest condemnation. The company has done very well for the last two or three years, and why not go on as we are? It may be true that part of the recent profits were from transport service, but who knows how soon transports will be wanted again? I have supplied the company for years with articles in my line (soap and such like), and I think it would be a disgrace to Liverpool if the steamers ceased to trade to this port. I shall certainly vote against it.

Mr. Jones (Manchester) said: With very much that was said by our chairman I heartily agree, but I could not help thinking that I detected, more perhaps in his tone and manner than in the actual words, a feeling of regret that some retaliatory measures had not been taken by our government to counteract this American legislation. No, sir; this country can never go back upon the principles of free trade which have raised her from nothing—I repeat, sir, from absolutely nothing—to the pinnacle of unassailable pre-eminence in manufactures and commerce, upon which she now sits supreme. When the sugar trade was threatened by continental bounties, did our country retaliate? No, sir; they let it go rather than sacrifice a principle. And do you imagine, sir, that these principles are now to be sacrificed for the sake of a few selfish ship owners, and without regard to the welfare of the masses of the people? Why it would be simply absurd. And let me tell you, sir, that there is not the slightest doubt that as soon as our American cousins see the folly of thus trying to bolster up their industries artificially they will abrogate the absurd laws made for that purpose, and then the shipping now being transferred to their flag will flock back to this country again. Now, let me add that I do not think the directors have made anything like as good a bargain as they might have made if they had shown more firmness. They should have held for £30, or at least £25 per share, and no doubt they would have got it. But it is too late, I suppose, to go into that now, and I shall vote for the motion.

At this point, my informant adds, "a German band played, and I woke up."

GROWTH OF THE UNITED STATES.

"A picture on every page" is the term by which an enthusiastic student of statistics describes the "Statistical Abstract of the United States," just issued by the treasury bureau of statistics. While solid columns of figures are not perhaps looked upon by the average citizen as especially picturesque, an examination of the pages of the publication above mentioned, the statistical abstract, presents some interesting, if not absolutely picturesque facts. It is interesting, for instance, to observe by one of its earliest pages that the gross area of the United States, exclusive of Alaska and Hawaii, has grown from 827,844 square miles in 1800 to 3,025,600 in 1900; and the population meantime from 5,308,483 in 1800 to 75,693,724 in 1900. Another page shows that Virginia ranked first in population in 1800 and in 1900 ranked seventeenth; that Pennsylvania has sturdily held her own, having ranked second in population in 1800 and the same in 1900; New York, which ranked third in 1800, stands first in the list in 1900; North Carolina, which stood fourth in rank in 1800, was fifteenth in 1900. Kentucky has moved downward from eighth in rank in 1800 to twenty-ninth in 1900; Delaware, from seventeenth to forty-sixth; while Indiana moved upward from twenty-first in rank in 1800 to eighth in 1900; and Ohio from eighteenth place in 1800 to fourth in rank in 1900.

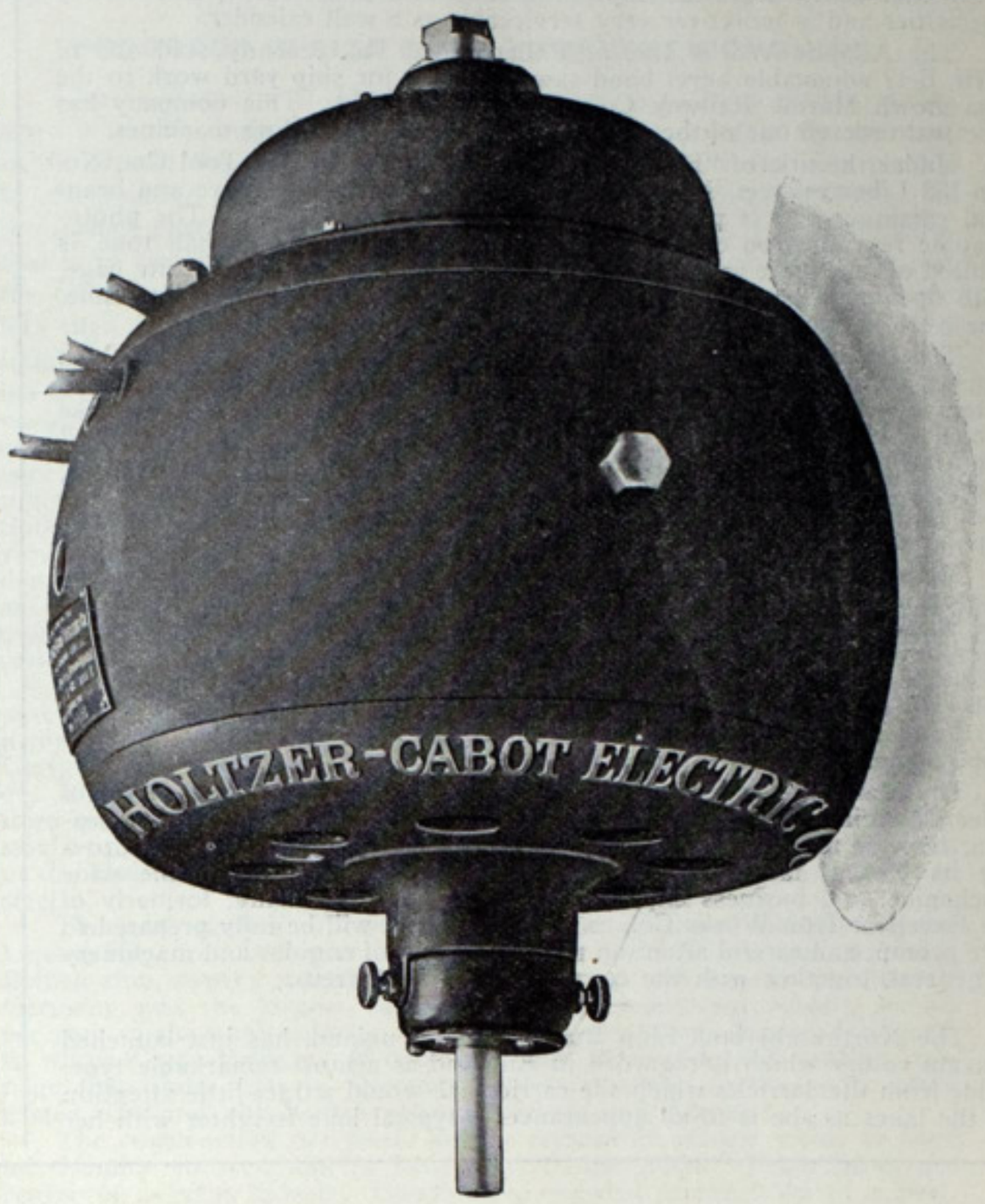
Another page which presents an interesting picture is that devoted to the analysis of the principal of the public debt of the United States. It shows that the debt of the United States which in 1865 was $78.25 per capita, was in 1901 $13.45 per capita, and that the interest charge which in 1865 was $4.29 per capita, was in 1901 38 cents per capita; the lowest rate of interest in outstanding bonds in 1865 was 4 per cent., and of those there were but $90,000,000 against $245,000,000 in 5 per cent. bonds, $1,213,000,000 at 6 per cent. and $671,000,000 at 7.3 per cent.; while in 1901 practically one-half of the outstanding debt stood at 2 per cent., and even those bonds were selling at a premium in the markets.

Another interesting picture is found on the page which shows the condition of the savings banks of the United States in 1901. Deposits in savings banks in 1820 were $1,138,576, and the number of depositors, 8,635; in 1901 the amount of deposits was $2,449,547,885, and the number of depositors 6,107,083; the average sum due each depositor in 1820 was $131.86; in 1901, it was $401.10. Another interesting picture is found in the statement showing the transactions of the New York clearing house from 1854 to 1901. In 1854 the number of banks was fifty, the capital $47,000,000, and the clearings $5,750,455,987; in 1901, the number of banks had only increased to sixty-two, their capital to $82,000,000, while the clearings had increased to $77,020,672,494, the number of banks having thus increased about 25 per cent, the capital about 75 per cent., while the clearings in 1901 were thirteen times as much as in 1854.

Still another interesting picture is that which shows in a single table the story of the foreign commerce of the United States from 1800 to 1900. In 1800 the imports were $91,000,000 and the exports $71,000,000, imports exceeding exports by $20,000,000 or nearly 30 per cent; in 1901 imports were $823,000,000 and exports $1,487,000,000, the excess of exports being $664,000,000, or 80 per cent. greater than the imports. Imports in 1901 were nine times as great as in 1800, and exports were twenty-one times as great as in 1800. Another interesting picture is that which divides the imports into great classes and shows the relative growth of each. Articles of food in 1886 formed 31 per cent. of the imports and in 1901, 26 per cent.; manufactures ready for consumption in 1886 formed 20 per cent. of the imports, and in 1901 16.8 per cent., showing that manufacturers are steadily increasing their importations of raw materials required in manufacturing.

ELECTRIC LAUNCHES.

Navigation is one of the latest fields to be invaded by electricity, and now small launches and even row boats are being driven by electric motors in an entirely satisfactory manner. In the accompanying illustration is shown a half horse power motor, which is one of a line constructed especially for launch work. As will be observed, the motor is entirely enclosed, being practically moisture proof. If the motor is well protected or is to be used in fresh water, the weight is materially decreased by the use of aluminum parts where other metals are not necessary for electrical or magnetic purposes; although, if the motor is likely to be exposed to the salt water, brass or iron fittings are recommended because of the corrosive action of the salt water upon the aluminum. In the latter case the finished parts of the machine are copper plated for the same reason. The shape of the frame is such that two equal paths are provided for the magnetic flux, one on either side of the armature, a design which allows of great compactness. As the voltage is low the current is necessarily proportionately high, making the design of the brush holder a feature of great importance. The brush holder used with these motors is of the box type with parallel feed, making it possible to run the motor for a long period of time without any attention to the brushes. A special form of brush is used consisting of stratifications of woven copper gauze and carbon, the outside layers being of the latter substance with a heavy copper plate. In this way are secured the advantages of the high conductivity of the copper and the wearing qualities of the carbon; the latter also preventing the copper gauze from spreading out and sticking in the holder. A continuous metallic circuit is maintained between the brush and the holder so that no sliding or imperfect contacts are required to carry current. This makes an extremely efficient and satisfactory brush arrangement for work of this kind, allowing long wear with minimum attention and making heat losses, due to the flow of the current, insignificant. The machines are very economical in operation. The speed is low (1,000 R.P.M.) and as they are series wound, they use field energy only in proportion to the



load, thus modifying two of the most important sources of waste; namely, friction and heat losses in the windings. The voltage is usually low, from twenty to forty being ample in most cases, so that there is no possible chance of injury to the operator. The motor is usually supported in the stern of the boat by means of heavy braces which are bolted to the body of the motor. This line of machines is manufactured by The Holtzer-Cabot Electric Co. of Boston, Mass.

Following are the officers of the Jackson Transit Co. for year of 1902: Samuel Mitchell, president; J. A. Stone, vice-president; A. S. Chisholm, secretary; W. C. Richardson, treasurer and manager.

A new chart of the Straits of Mackinac, in colors, has just been issued by the United States lake survey office, and can be secured through the Marine Review Pub. Co., Cleveland, Ohio.

Some interesting reading matter relative to very shallow draft powerful steamboats for river navigation is mailed free on receipt of request by Marine Iron Works, station A, Chicago. 5

COMPAGNIE GÉNÉRALE TRANSATLANTIQUE

FRENCH LINE—UNITED STATES AND EUROPEAN MAIL ROUTE.

New York to Havre-Paris in less than one week.
Steamers sail from New York every Thursday, at 10 a. m.

Company's own vestibuled train from Havre to Paris in four hours.

FLEET 70 STEAMERS.

In New York service the following gigantic Twin Screw Steamers:

"LA LORRAINE"	(new)	Twin Screw	15,000	tons	22,000	H.P.
"LA SAVOIE"	(new)	" "	15,000	"	22,000	"
"LA TOURAINE"	(modern)	" "	10,000	"	12,000	"
"L'AQUITAINE"	(modern)	" "	10,000	"	16,000	"

Naval officers command above steamers, insuring the same strict discipline as on a man-of-war. These ships all have double bottoms and water-tight compartments, and prescribed routes are taken to avoid fogs. The above steamers contain every modern twentieth century equipment for safety, most luxurious accommodations, and the cuisine is famous. The favorite route of the elite of both continents. For rates, plans and other particulars apply to

EUGENE DE BOCANDE, General Agent for United States and Canada, 32 Broadway, New York.

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OR TO LOCAL AGENTS.

SMOOTH-ON IRON CEMENTS

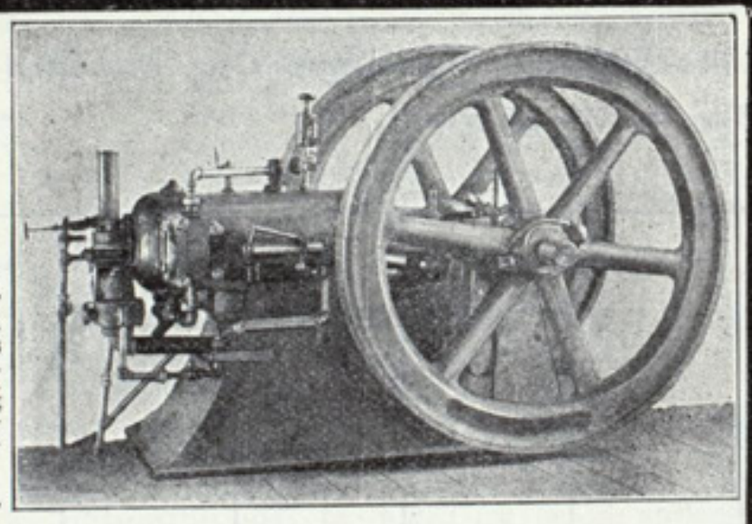
We have many like the following:

April 26, 1901.

To Whom It May Concern:

We have used Smooth-On Iron Cement for leaks and fractures on Water Jackets of Gas Engines with satisfactory results. We find it an economical way of making a durable repair.

Hudson County Gas Co.
P. S. Young, Secretary.



The Smooth-On Iron and Steel Cements are dry metallic compositions—which, when mixed with water, become a hard metallic iron that is insoluble in Steam, Water, Petroleum or other oils—that will withstand an intense heat, and, the expansion and contraction being the same as iron, is why they are sometimes called Magic Iron. When applied to a blemish in a casting by a skilled mechanic the blemish is removed. Unequalled for boiler patching and stopping blowholes in iron or steel castings; when metalized, Smooth-On is the color of cast iron and as hard. Write for our 60-page illustrated book telling all about the different Smooth-On Cements; it is free.

Sole Proprietors and Manufacturers,

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VREELAND TOMPKINS—CHEMIST AND GEN. MANAGER

"Seaboard Steel Castings."

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APPROVED BY LLOYD'S.

ANCHORS CAST AND TESTED ON ORDER, OR STOCK ORDERS PROMPTLY FILLED.

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OPEN-HEARTH STEEL CASTINGS OF THE HIGHEST GRADE.

FACILITIES FOR CASTINGS UP TO 80 000 POUNDS WEIGHT.

MACHINE WORK AND PATTERNS FURNISHED WHEN REQUIRED.

RAIL OR WATER DELIVERIES.

CAPACITY, 1500 TONS PER MONTH

Seaboard Steel Casting Co.,

CHESTER, PA.

"BENEDICT-NICKEL" Seamless Condenser Tubes
are the only ones that resist electrolysis.
Far superior to brass or copper.
Our treatise on "Electrolysis of Condenser Tubes" tells why—send for it
BENEDICT & BURNHAM MFG. CO.
Mills and Main Office, Waterbury, Conn.
New York, 253 Broadway. Boston, 172 High St.

TRADE NOTES.

The imperial yacht Hohenzollern is being re-equipped while in this country with the packings of the United States Metallic Packing Co. of Philadelphia.

The American Steam Gauge & Valve Mfg. Co. of Boston has issued a calendar which bears the impress of several of their marine and railway specialties and is moreover very serviceable as a wall calendar.

The Atlantic Works Inc. of Philadelphia, Pa., recently sold one of their B-17 adjustable bevel band saw machines for ship yard work to the Sharptown Marine Railway Co. of Sharptown, Md. This company has also just ordered one of the Atlantic Works' band saw filing machines.

Under the title of "Heavy Lathes," the Pond Machine Tool Co., No. 136-138 Liberty street, New York, has issued a most expensive and beautiful catalogue. It is printed in two colors—red and black. The photographic reproduction of the lathe, in outlined and vignetted half tone, is printed on one page and the description of the lathe on the opposite page, both opening to each other and being before the eye at the same time. The work is excellently done. The cover is in brown and gold.

The 1902 catalogue of the Foster Engineering Co. of Newark, N. J., reaches the dignity of a book. It is bound in gray and stamped in raised letters of gold. In its preface the company says that its business has grown solely on the merits of the Foster pressure regulator and kindred engineering specialties. The company has just built a new factory devoted exclusively to the manufacture of pressure regulating devices and does not believe that there is another in the country as large or as well appointed.

Messrs. Robert W. Hunt & Co. of Chicago have been given the inspection of the rails, splice bars, bolts, nuts and spikes which the Mexican National Railway Co. have purchased in England and Belgium. They have also been given the inspection of rails which the Louisville & Nashville Railway Co. has purchased in Germany. John J. Cone of the firm will have immediate personal charge of the inspection of this material and will take with him to Europe a detail of men selected from his firm's American corps of inspectors.

The Manning-Stovering Machine Co. has succeeded to the business of Thos. Manning, Jr. & Co., and will continue the same at the same location, No. 100 to 110 Merwin street. The new company is greatly improving its present facilities, and with the further advantage of the wide mechanical and business experience of Mr. John Stovering, formerly of the Excelsior Iron Works Co., as superintendent, will be fully prepared to give prompt and careful attention to the building of engines and machinery in general, together with the repairs pertaining thereto.

The Northumberland Ship Building Co., England, has just launched a steam collier which is regarded in England as a most remarkable type. Aside from the derricks which she carries she would attract little attention on the lakes as she is to all appearances a typical lake freighter with her engines crowded aft and her entire deck given over to hatches. She is intended to convey coal from Australia to ports on the west coast of South America. Her gross tonnage is 4,315 and her engines are 2,250 I.H.P. She is provided with three pairs of derrick posts, each 40 ft. high, each derrick being fitted with a Temperley transporter. Her hatchways are 22 ft. wide and corresponding length.

WANTED.

Proposals for laying approximately seventeen-hundred lineal feet of thirty-six inch riveted intake water pipe. Parties desiring to bid on this work will be furnished plans and specifications and should address Austin Farrell, Supt., Pioneer Iron Company, Gladstone, Mich.

Feb. 27.

FOR SALE.

Two First-Class Passenger Steamers.

One side-wheel steel steamer. Length, 201.4 ft.; beam, 32.5 ft.; over all, 56 ft.; depth, 9.4 ft. Hull, machinery and boiler in good condition. Has upper deck with cabin and state rooms; complete outfit and is allowed to carry 1,500 excursion passengers.

One steel propeller. Length, 155 ft.; beam, 30 ft.; depth, 9.7 ft. Hull and machinery in good condition. Has upper cabin and thirty state rooms; complete outfit. Is allowed to carry 500 excursion passengers. Speed, 15 miles per hour.

Apply to the H. W. Williams Transportation Line, South Haven, Mich. tf

U. S. Engineer Office, 1637 Indiana Ave., Chicago, Ill., January 27, 1902. Sealed proposals for dredging at Calumet Harbor, Ill., will be received here until 12, noon, March 5, 1902, and then publicly opened. Information on application. O. H. Ernst, Lt. Col., Engrs. Feb. 27.

U. S. Engineer Office, Buffalo, N. Y., February 1, 1902. Sealed proposals for removal of wreck in harbor at Buffalo, N. Y., will be received here until 11 A. M., March 4, 1902, and then opened. Information furnished on application. T. W. Symons, Major, Engrs. Feb. 27.

BELLEVILLE GENERATORS

Grand Prix 1889 — Hors Concours 1900
Originated 1849 — Latest Improvements 1896

Number of Nautical Miles made each year by Steamships of the Messageries Maritimes Co., Provided with Belleville Generators—Since their Adoption in the Service.

Year.	Australien	Polynésien	Armand Béhic	Ville de la Ciotat	Ernest Simons	Chili	Cordillère	Laos	Indus	Tonkin	Annam	Atlantique
1890	67,728	2,460										
1891	68,247	68,331	204									
1892	68,247	68,403	69,822	23,259								
1893	68,379	68,343	68,286	68,247								
1894	68,439	68,367	68,574	68,439	37,701							
1895	68,673	68,766	68,739	68,808	40,887	28,713						
1896	69,534	92,718	69,696	69,549	62,205	63,153	40,716					
1897	68,250	69,606	92,736	69,555	62,235	76,110	63,357	43,146				
1898	70,938	69,534	69,552	69,597	62,526	63,240	63,240	62,553	63,954	22,707		
1899	69,534	69,615	67,431	90,405	60,246	62,778	62,868	52,344	54,855	44,007	22,884	
1900	69,534	67,494	69,744	69,564	61,719	62,382	62,502	51,471	53,373	62,016	63,066	52,140
Total	757,503	713,637	644,784	597,423	387,519	356,376	292,683	209,514	172,182	128,730	85,950	52,140

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